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ILLINOIS MEDICAL JOURNAL

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Send original articles, advertising copy, cuts and all communications relating to advertising to Dr. Charles J. Whalen, c/o Illinois Medical Journal, 185 N. Wabash Ave., Chicago.

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Editorial

MEDICAL SOCIETY COOPERATION HELPS DEFEAT THE OBNOXIOUS NEWTON BILL

Dr. William C. Woodward, representing the American Medical Association (the national organization) and Dr. William D. Chapman appearing for the Illinois State Medical Society (the state organization) played a most prominent part during the hearing at Washington in opposition to the Newton Bill.

Other physicians who appeared as antagonists to the bill included Dr. George W. Kosmak, New York City, and Dr. Augustus Thorndyke, Boston.

Mrs. H. M. Amsden, Concord, N. H., voiced protest for the Woman's Auxiliary of the New Hampshire State Medical Association.

The part played by doctors and their official organizations in the defeat of the Newton Bill demand the gratitude of every citizen in the United States. Dr. Woodward was highly complimented by a member of the committee of Interstate and Foreign Commerce before which the hearing was held. We publish the compliment as follows:

House of Representatives, Washington, D. C.
My Dear Doctor Whalen:

Quite full hearings have been held on the Newton Bill, and I think that both sides were fairly well represented.

Dr. William C. Woodward, of Chicago, made a specially able presentation of the case against the bill, both from a medical and legal point of view. All the members of the committee acknowledged that, irrespective of their own views on the bill.

SCHUYLER MERRITT,
Member of the Committee.

It is well to remember that the defeat of the Newton Bill does not mean that the Sheppard-Towner Billl is no longer with us. As a matter

of fact, the proponents are even now asking for a five-year extension of it.

Our one regret is that all forty-eight state medical societies were not officially represented in opposition at the hearing of the Newton Bill.

THE 1929 ANNUAL MEETING

Plans are under way to surpass all previous annual meetings of the Society at the 1929 Annual Meeting that will be held in Peoria May 21 to 23. Programs are being arranged so as to benefit the majority of the members of the Society regardless of the committee's own professional inclinations. The meetings will be in the large auditorium which will also house the exhibits. Commercial exhibits will excel any the Society has ever offered at a down-state meeting. There will be a splendid array of scientific exhibits, which are now being assembled. The Peoria Society is well organized, and will make the visit of the members and guests at the meeting one to be long remembered. The Peoria Association of Commerce, the Press of the city and the Hotels are aiding in every way possible to make this a really successful convention. A preliminary program will be published in the April issue of THE JOURNAL, and the official program in the May issue. Railroads have agreed to allow the usual Convention rate, on the certificate plan. This will be announced in detail in the April JOURNAL. Now is the time for the members of the Illinois State Medical Society to begin planning to attend. The first session of the House of Delegates will begin in the afternoon of the first day of the meeting, and will not be prolonged to the late night hour as has been the custom in the past. The Secretaries' Conference, always one of the big features, will begin at 10:00 A. M. Tuesday, May 21. All Secretaries of Component Societies, including the branch societies of the Chicago Medical Society are specially urged to be present. Dr. R. L. Green, the Peoria chairman of the committee on arrangements, is anxious to make details satisfactory to all who come to the meeting. Dr. W. A. Malcolm of Peoria, has charge of the hotel reservations, and he will see that everyone asking for a reservation gets it. Reservations should be made at an early date, and assurance is given that the hotel facilities are entirely adequate for a large attendance.

This annual meeting is the MEMBERS' own meeting. Instead of the usual fourteen per cent. of the membership being present, as has been the case in the past, the attendance should be at least twenty-five per cent. of the entire membership. All section officers are working hard to make the program of each section interesting. There will be joint meetings of the sections on Medicine and Surgery, which will prove to be a popular procedure.

Peoria is centrally located, and readily accessible to all physicians in the state of Illinois. Hard roads leading from all parts of the state, and many railroads from every direction will make the going easy for all.

At each meeting of the various component county societies, a special effort should be made to get the members out to this Peoria convention. Delegates to be seated in the House of Delegates should be selected carefully. The various societies should insist that their delegates attend the meeting. The House of Delegates is the real legislative body of the entire Society, and the selection of delegates should not be considered lightly.

Boost the annual meeting, and show Peoria that the city's efforts are not in vain. Make Peoria prove that its facilities are ample for a booster attendance for the 1929 Annual meeting from May 21 to May 23, 1929.

ILLINOIS STATE MEDICAL SOCIETY

SEVENTY-NINTH ANNUAL MEETING, MAY 21-23, 1929, Peoria, Illinois

Make your hotel reservations early, with Dr. W. A. Malcolm, Chairman of the Reservations Committee, 604 Peoria Life Building.

LEADING PEORIA HOTELS

HOTEL AND RATES

	—Single—		—Double—	
Number of Rooms Location and Phone No.	With Bath	Without Bath	With Bath	Without Bath
Pere Marquette—400 rooms. Cor. Main and Madison. Phone 4-2121.	$3.00 to 5.00	....	$5.00 to 8.00	....
Jefferson—400 rooms Cor. Jefferson and Liberty. Phone 4-1151.	2.50 to 4.00	....	4.00 to 6.00	....
Mayer—200 rooms Cor. Adams and Hamilton. Phone 4-5155.	2.50 and 3.00	$1.50 to 1.75	4.00 to 5.00	$2.50 ....
Metzger—126 rooms 214 N. Adams. Phone 4-5191.	....	1.00 to 1.50	....	2.00 and 2.50
New National—119 rooms 217 N. Jefferson. Phone 4-4171.	2.50 and 3.00	1.25 and 1.50	3.50 and 4.00	2.50 ....

PEORIA HOTELS—CONT'D

Niagara—110 rooms..	2.50	1.50	4.00	2.50
108 S. Jefferson.	to	to	and	and
Phone 4-3178.	3.50	2.00	5.00	3.00
Pascal—110 rooms	2.00	1.50	3.50	2.50
Cor. Adams and Hamilton.			and	
Phone 4-5105.	....	....	4.00	....
Fey—100 rooms	2.50	1.50	4.00	1.00
Cor. Adams and Liberty.				
Phone 4-7107.				
Seneca—80 rooms	1.50	....	3.00	....
Cor. Jefferson & Harrison.	to		to	
Phone 4-5111.	2.50	....	3.50	....
Endres—45 rooms	1.50	.75	2.50	1.50
209 E. Franklin.		to		to
Phone 4-1503.	....	1.25	....	2.00
New Yale—43 rooms	1.50	....	2.50	....
Jefferson at Franklin.	and		and	
Phone 4-3120.	2.00	....	3.00	....
Harold—42 rooms	....	1.50	....	2.00
217 Main.				to
Phone 4-3105.	....	....	....	3.00
Meek's—33 rooms	....	.75	....	1.50
316 Fulton .		to		and
Phone 9217.	....	1.50	....	2.00

A widely known traveler and author after spending some years in Peoria acquiring inspiration for his works, left a heritage to the city when, describing the rugged scenery, he said: "Nowhere in the wide world is there to be found such mundane beauty as from the bluffs of Peoria, overlooking the Illinois river."

Rich in romantic lore, this garden spot was as early as two hundred and fifty years ago the site of a French mission and trading post, where contact was had with the powerful tribes of Illinois Indians, and the site of the city of Peoria was chosen and named after one of these tribes.

The general topography is a flat plateau extending from two hundred to five thousand feet back from the river's shore, when it rises into majestic bluffs from two hundred to four hundred feet high. The hills and dales are wonderfully rich in brooks and woodlands, and occasionally gorgeous canyon and waterfall formations are encountered. Peoria lake, too, affords ample opportunity for every water sport.

With its temperate climate and healthful environs, its wealth of historic lore and great industrial projects, Peoria is keenly sought out by tourists. Vacationists are drawn from faraway points and the sporting season leaves the nimrod fully repaid. Week-end and over-Sunday parties find it a most inviting objective.

With its loyal, friendly spirit, recognized nation-wide, and its superior transportation, housing and assemblage accommodations, Peoria is one of the greatest convention cities in the middle west.

Peoria welcomes you and bids you partake of her inspiration and her hospitality.

Peoria is situated near the center of Illinois, on a direct paved highway from St. Louis to Chicago, along the scenic route of the Illinois River Valley. It is easily accessible from every part of the country. In addition to eight paved highways, leading into the city, Peoria is served by fifteen railways, steam and electric, and several motor bus lines. Peoria is an air port on the Chicago-to-Gulf air mail line.

Jefferson Hotel

Whether you come to Peoria for a visit or intend to make your home here, you will be impressed with the metropolitan appearance of the city, the hospitality of the people and the ideal living conditions.

Tourists are attracted by scores of interesting points in and around the city. Peoria has five beautiful parks, covering a total of 1,225 acres, many beautiful drives, a score of public playgrounds and four golf courses. Grand View Drive, overlooking Peoria Lake and the beautiful Illinois River Valley is praised by tourists throughout the country.

Peoria's eight miles of river frontage, together with Peoria Lake, affords every form of boating and water sports. In addition to these, there are six enclosed swimming pools and two large modern public pools.

Peoria is the shopping center of down state

Illinois. Seven large department stores and many specialty shops, afford every shopping advantage found in larger cities.

The city has exceptional educational advantages, including Bradley College and the Peoria Art Institute. It is noted for its beautiful churches.

Twelve theaters offering a variety of the best productions the year round, several fine clubs and four country clubs afford many forms of recreation.

Pere Marquette Hotel

Greater Peoria has a population of 117,095. One hundred twenty-five major manufacturing plants and 225 smaller ones have invested $129,000,000.00 in Peoria. These industries have an annual output of $212,000,000.00 and a pay roll of $40,000,000.00.

Among the nationally advertised products manufactured are tractors, washing machines, agricultural implements, furnaces, oil burners, stock feeds, food products, candies, cereals, cigars, steel and wire, cordage, etc.

Peoria leads the world in the production of commercial solvents and ranks first in the manufacture of high priced washing machines, and track laying type of tractors.

Peoria is in the center of a righ agricultural section and its live stock market is the second largest in the United States from the standpoint of motor truck receipts.

Peoria entertained 116 state, national and international conventions during the past year. Among some of the national conventions recetly attracted to Peoria, "The Cogenial Convention City," were the National American Business Club, National Altrusa Club, American Bowling Congress, the Saengerbund of the Northwest, American Poultry Association, the National D. O. K. K., National Swine Show and many others.

Peoria is just "one sleep" from three-fourths of the total population of the United States. It has splendid hotel accommodations with reasonable rates, with a convention capacity of 7,500.

ADDITIONAL NARCOTIC LAWS NOT NEEDED IN ILLINOIS

On February 7, 1929, Senator Barbour introduced a narcotic bill in the state senate. It was listed as Senate Bill No. 102 and sent to the judiciary committee, of which Senator Barbour is chairman.

The title of the bill is as follows: "For an

act regulating and controlling the use of narcotics and providing for the isolation and rehabilitation of drug addicts and to repeal certain sections of an act therein named."

In the first place there is at present a narcotic bill in this State copied word for word from the U. S. Narcotic Law. This fact seemed to be unknown to the sponsors of the Barbour bill.

Second, the bill is unconstitutional in that the title and contents are not in harmony in order to get the purport enacted the information would have to be presented in two separate bills.

Section 5 is in direct conflict with the United States Narcotic law.

Sections 7 and 8 provide for a state narcotic hospital and the commitment therein of habitual drug users for a period of not less than eight months or more than two years. Upon information supplied by a policeman or any citizen an alleged addict could be brought into court and if the court finds, upon the evidence of two or more reputable physicians that he needs treatment he would be confined for the eight months to two years "cure" after that he could be discharged or paroled "under such terms and conditions as the department (public welfare may establish)."

It would be legal, under this provision, for the department to compel paroled persons to report to somebody periodically for the remainder of their lives. It also makes mandatory the eight months confinement regardless whether the addict is cured in a shorter time. Being a user of narcotics is not a crime or an offense in the eyes of the law. All addicts are not criminals, neither are all criminals addicts. Many of the most educated and highly respected citizens of the country are the victims of addictions the operation of such a law would be mischievous and degrading.

The Barbour Narcotic Bill is both from a legal and medical standpoint so full of blow holes that further comment is unnecessary, in its present form it is impossible of enactment into law.

At the subcommittee hearing on the Barbour Bill in Chicago January 26th it was admitted by Mr. Allen representing the United States Narcotic division, Chicago District, that doctors and druggists play no part in the cause of drug addiction, that so far as these two professions are concerned they are practically one hundred per cent clear of suspicion as being causative factor in drug addiction.

MEDICAL PROFESSION IS NOT RESPONSIBLE FOR DRUG ADDICTION

So much loose talk by public officials and private citizens is engaged in from time to time directed against the medical profession as being responsible for drug addiction that we take the liberty of again calling attention of both the profession and the lay public to these untrue and unjust attacks.

The Barbour Bill, Senate Bill No. 102, is primarily directed at the medical and pharmaceutical professions. At the hearing on this bill in subcommittee February 23, 1929, in Chicago, the United States government representative, Mr. Allen, stated that both these professions are blameless as a causative factor in drug addiction.

As a sample of loose talk engaged in by public speakers we call attention relative to the number of addicts in this country and the part played by physicians as a causative factor. According to the Taylorville Daily Courier of March 1, 1927, of a speech made by a Federal Judge when speaking before the Taylorville Rotary Club of Taylorville, Illinois, on February 28, said that "2,500,000 addicts in the United States were made by the practice of medicine."

This and similar statements are unjust and untrue. The medical profession are not responsible for addiction and the number of addiction in the country, according to authentic figures nowhere near approach the number mentioned. The figures quoted are away ahead of any number of estimates made by official organizations.

L. G. Nutt, chief of the narcotic division of the United States on Dec. 11, 1926, estimated that there were 100,000 addicts in the country. As this is Chief Nutt's especial field of investigation it would seem that he would be better able to give the number of addicts in the United States than any other man. Mr. Nutt in giving this estimate before the House Committee on Appropriations added that his "estimate was based on a survey by 300 field agents engaged in this work, who mingled with the underworld and consulted physicians and city authorities and others."

Mr. Nutt added that 98 people are employed

in the anti-narcotic work at the headquarters at Washington, and the total number of employes there and in the field is 333: that last year they had brought about 5,120 convictions, with total collections from the violators of the law, including fines of $981,739.

May 23, 1924, *Public Health Reports,* in a brochure,

"The Prevalence and Trend of Drug Addiction in the United States and Factors Influencing It," quotes from surveys of the States of Tennessee and Pennsylvania and from the United States Army and the Treasury report. The maximum probability of drug addicts in any of these findings was placed at 269,000 or about ten per cent of the statement of Judge Fitzhenry.

Mr. Nutt's estimate, of course, is less than one-twenty-fifth of what the Bloomington judge lays upon the country's population.

In the Tennessee survey made by Lucius P. Brosn, State Food and Drug Commissioner, as he was able to register 2,370 addicts he estimated the maximum number as not exceeding 5,000 in the state. Using these figures as a basis he estimated 215,000 in the entire country.

The treasury department survey under the secretary of the treasury, conceded the most comprehensive survey made up to that time; claims there were not over 237,655 addicts in the United States.

The Pennsylvania survey was made under the State Bureau of Drug Control. As in five years this bureau collected the names and addresses of drug addicts in Pennsylvania and obtained less than 9,000 names, the chief of the bureau estimated that there were not more than 20,000 addicts in the state; that on this basis there would be approximately 242,000 addicts in the United States.

The United States Army findings were based on a survey of all men in the draft age and found there were only 3,284 drug addicts. If the army rate is applied to the entire United States based on the 1920 census there would be approximately 99,500 addicts.

Clinical reports were made by revenue agents of the 44 clinics supervised by the internal revenue department 34 of which contain statistical information on addiction in large cities in California, Connecticut, Georgia, Kentucky, Louisiana, New York, North Carolina, Ohio, Rhode Island, Tennessee, Texas, and West Virginia.

These clinical statistics show that there were 4,123 addicts in 34 cities having a total population of 4,182,952 or 0.98 addict per 1000 persons. At this rate there would have been in America 104,300 addicts in 1924.

New York City clinic not included in the cities in states above mentioned registered 7,464 addicts. Using the 1920 census as a basis of computation the New York City rate would give approximately 140,000 addicts for the entire country.

Applying the New York rate to the entire country would be absurd. New York is the largest port of entry in the United States and is the clearing house for the whole world and naturally the percentage of addiction in New York far exceeds that of any other city and applying the same yard stick to New York as to other sections of the country is ridiculous.

Using the U. S. *Public Health Reports* of "May, 1924," yields the maximum estimate 269,000 and a minimum estimate of 99,500 addicts in the U. S. with various estimates between these two figures.

Mr. Nutt added, "Of the hundred thousand non-medical addicts in this country, and by non-medical addicts, I mean addicts that take it simply to gratify the habit, nearly all acquire their supply through bootleg channels because the doctors will not prescribe it except occasionally."

Although the usual disposition of the addict is to shift the responsibility for his affliction to others, and to justify himself for his habit, less than one per cent, claim the addiction is due primarily to physicians eventuating from a necessary treatment for disease.

Let it be repeated, that according to statistics and surveys the United States government officials and health departments unite in the finding that physicians play an inconspicuous part if any in the causation of drug addiction.

SOCIAL WORK IS BECOMING MORE AND MORE A METHOD OF TREATMENT

Wilfred S. Reynolds, executive director to the delegates of the Chicago Council of Social Agencies in his annual report at the meeting January 25, 1929, said: "Social work a new charity;

Out of a fuller understanding of the aims and contempt of the term 'charity' social work has unfolded. Adopting much of terminology and method from the medical and legal professions, *social work is becoming more and more a method of treatment.* Its patients or clients are those suffering from or threatened with ills, which if allowed their freedom, will result in the failure of individuals as social beings. Its methods bring into use a treatment procedure. Conditions are analyzed; causes are evaluated; processes are set up to relieve immediate conditions, to affect favorably the causes, and to sustain, protect, guide and restore so far as possible, human beings and family groups to lives of usefulness.

"Our council now includes in its membership one hundred and seventy-eight social work organizations serving the Chicago community."

COURSE IN LARYNGOSCOPY

Dr. Franz Hasslinger, Docent of the Hajek Clinic, Vienna, will be in Chicago, Monday, April 1, 1929, as the guest of the Chicago Laryngological and Otological Society at its regular monthly meeting. Immediately following this meeting, he will begin his Course in Laryngoscopy and Tracheo-Bronchoscopy here in Chicago under the auspices of the Chicago Laryngological and Otological Society.

TENTATIVE PLAN

HASSLINGER COURSE LARYNGOSCOPY AND TRACHEO-BRONCHOSCOPY

Pittsfield Building, Chicago, Illinois
(Courtesy Estate of Marshall Field)
April 1 to 7, inclusive

INSTRUCTION

Tues., Wed., Thurs., Fri., Sat.
4:30 P. M.-6:30 P. M.
7:30 P. M.-9:30 P. M.
Sunday
2:00 P. M.-6:00 P. M.

DINNER

Tavern Restaurant, Pittsfield Building
6:30 P. M.-7:30 P. M.
(Tues. to Satur.)

HOSPITAL CLINICS AND DEMONSTRATION

9:00 A. M.-12:00 Noon
2:00 P. M.-4:00 P. M.

EACH COURSE LIMITED TO TWENTY
INDIVIDUAL APPROXIMATE FEE $50.00
(fifty dollars)

LECTURE—Monday, April 1, 1929

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

Medical and Dental Arts Building
Fellowship Gathering and Dinner 6:00 P. M.

BACK TO THE SHEPPARD-TOWNER BILL: THE NEWTON BILL HAS BEEN ABANDONED

Realizing the inevitable defeat of the Newton Bill, its sponsors abandoned the bill and substituted a new bill providing for a five-year extension of the Sheppard-Towner Act. It is known as H. R. 17183 and is as follows:

70TH CONGRESS, 2D SESSION—H. R. 17183
IN THE HOUSE OF REPRESENTATIVES
February 19, 1929

Mr. Newton introduced the following bill; which was referred to the Committee on Interstate and Foreign Commerce and ordered to be printed:

A BILL

To continue in effect for five years the Act entitled "An Act for the promotion of the welfare and hygiene of maternity and infancy, and for other purposes," approved November 23, 1921.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 2 of the Act entitled "An Act for the promotion of the welfare and hygiene of maternity and infancy, and for other purposes," approved November 23, 1921 (United States Code, title 42, section 163), as amended by the Act approved January 22, 1927 (Forty-fourth Statutes at Large, page 1024; United States Code, Supplement I, title 42, section 163), is amended by striking out the words "for the period of seven years" wherever they appear in such section, as so amended, and inserting in lieu thereof the words "for the period of twelve years."

Sec. 2. Section 2 of such Act approved January 22, 1927, is amended to read as follows:

"Sec. 2. Such Act approved November 23, 1921, shall, after June 30, 1934, be of no force and effect."

OBJECTIONS TO THE EXTENSION OF THE SHEPPARD-TOWNER ACT

Note: All the objections that we have enumerated from time to time against the Newton Bill apply with equal force to the extension of the Sheppard-Towner Bill. The following objections to the Sheppard-Towner Bill should be noted:

1. The Sheppard-Towner Act fails to give food, shelter, clothing, medicine or medical care for any mother or any child.

2. The Act does put upon the taxpayers and bounty list, herds of investigators, inspectors, record keepers, red-tape winders, and political heelers of every creed, sex and color.

3. How thinking men view the Maternity Act, State subsidies and similar menacing legislation.

4. Under the provision of the Sheppard-Towner Act the Federal Government will control the expenditures of State appropriations.

5. Maternity education should be directed and supervised only by physicians.

6. The principle of Federal State aid as a means of financing public health work is an unsound financial policy.

7. An insidious attack upon the government of the republic and a potent malefactor against the bodily health of the citizens.

8. Socialistic rather than democratic; a political switchback rather than a child preservative.

9. A fecund breeder of more and higher taxes. The government "gifts" such as "Federal aid" are procurable for the people only by taxes from the people, and

10. The principle of Federal State aid as a means of financing public health work is an unsound financial policy.

11. Morally and legally, the proposition is indefensible. The Federal Government has no more right to collect money from New York, Illinois and Massachusetts and divide it among Montana, Wyoming and New Mexico than it has the right to take money from Jones and give it to Smith. The Federal Government collects more money from a millionaire than from a laborer for the Federal Government, but it has no more legal or moral right to make Illinois "divide up" with Texas or Alabama than it has the right to make Rockefeller "divide up" with Eugene V. Debs.

12. No such emergency exists as has been claimed for justification of the maternity act and there are no reliable statistics by which it can be proved that the United States stands seventeenth in the maternal death rate.

13. The means provided in the act willl not afford an effective remedy for alleged existing conditions.

14. The distribution of Federal funds to state health organizations will inevitably lead to the domination and dictation of state activities by the Children's Bureau.

15. The ability of the Children's Bureau to dictate and largely control the appointment of the head of the Children's Bureau in each state as well as all of the public health nurses, district superintendents and others, will result in the organization of a large body of salaried employes appointed and largely paid by a Federal bureau, yet working under a state department of which they are to a large extent, independent. Such a condition will produce friction and confusion in public health work, and will make possible the development of a political machine under the control of the Children's Bureau.

16. The problem of reducing maternal and infant death rates is largely a medical problem. Whenever it pleases the Sheppard-Towner Maternity Act authorities can work entirely under lay direction and independent of medical control.

17. With the exception of those activities which are clearly national in character, such as quarantine and the regulation of inter-state commerce and the like, public health work is a function of the state and local governments and should be paid for out of state and local funds and directed by state and local officials. The furnishing of instruction or care to mothers or any other persons needing such instruction is just as much a function of local government as it is the providing of food and clothes for the destitute. The assumption and exercise of these functions by the Federal Government is an invasion of the legitimate activities of the State.

18. Further, it is: A destroyer of individual rights and a developer of community supervision.

19. A conferrer of a million salaried jobs for political incumbents but not a dispenser of either clothing, shelter, food, medicine or medical care for any mother or any child.

20. A measure that will pay a retinue of politicians to disarrange the domesticity of a citizenry while the political wage is levied high-handedly out of the pockets of those whom the measure assumes to serve.

21. A masterpiece of false witness between politicians and the people both present and in the generations yet to come.

22. An invader of private morality and an

abaser of humanity to the level of animal and poultry bureaus.

23. A socialistic crime committed in the name of education.

24. A lever increasing the powers lodged now in the Department of Labor as by this bill the Children's Bureau of that portfolio becomes the official arbiter of the vital domesticity of the United States. Per sequence, the temple of every woman's body, becomes a political taxtable and an asset toward healers. Upon a woman's fecundity or lack of it will hinge the bread and butter jobs of a bureaucratic regiment.

25. An inductor of the practice of obstetrics to the rule of thumb of political chicanery and machine manipulation.

26. A fundamental process towards the eventual establishment of a permanent lay dictation of the practice of medical and surgical science.

27. A tax bearing boomerang, rending the citizenry by community, state, county and Federal levies for which will be received the octopus burden of a pack of strawbosses that will help no one and hurt many.

The Sheppard-Towner Maternity Act has achieved a certain amount of favor, or at the least of toleration, principally from two classes of people. In the first class may be placed those who are to benefit politically, either directly or indirectly by this Machiavellian piece of legislation. In the second class are those who know nothing about the actual content of the Sheppard-Towner Maternity Act but are finely misled by the name, and by certain rather emotion-reflexes aroused unconsciously in the average mind by the word "maternity."

The political beneficiaries of the bill know that its intent, content and portent are pork barrel from bung to ballast. The protesting but tax-paying citizens have a bland idea that in some blanket fashion this Sheppard-Towner Maternity Act intends to dole out adequate care and shelter to mothers and children in poverty stricken homes, where maternity is almost perpetually the order of the day and where the necessaries of decent living are not.

Now that this is exactly *not* what the Sheppard-Towner Maternity Act has any intention of doing is exactly *what* the average citizen of the United States does not know and has pretty carefully been kept from knowing. That the Sheppard-Towner Maternity Act *does* intend to put upon the tax-payer's bounty list herds upon top of herds of investigators, inspectors, record keepers, red tape winders and political heelers of any creed, sex, race or color who will be legally entitled to know as many intimate details about a man's wife as he does himself, and to inscribe this knowledge on the public documents of the country, is *exactly* what the average citizen does not know. That under the mask of "Education as to what maternal care should be" this bill intends to limit its benevolence to paying the salaries of the scouts, sleuths and maternal secret service is another item in what the citizen is not being taught about the Sheppard-Towner Maternity bill.

TALK AND TAXES—THAT'S THE SHEPPARD-TOWNER ACT

THE SHEPPARD - TOWNER - NEWTON BILL AND ENCROACHMENT UPON STATE RIGHTS IN HEALTH MATTERS STATE AID THE FEDERAL CONTROL OF EDUCATION

Washington Bureaucrats Clothed With Legislative, Executive and Judicial Powers

State Aid propagandists have not been content with the octopus-like growth of their pet. Encroachments upon state rights in health matters and numerous other activities are insufficient for their unsatisfied appetite. They are now out after federal control of education; the primary object of the Sheppard-Towner Maternity Bill was for federal control of medicine and the care of the sick.

The leading Constitutional lawyers of the country are all alert to the dangers of over-centralization of power at Washington. The Illinois Medical Jornal was the first to call the attention of the physicians and public to this rapidly growing menace. The system is now being condemned by most of the leading educators and practically all the country's statesmen. In no phase of human endeavor is the menace more dangerous than when applied to the care and supervision of the health and welfare of the people.

With the Hon. Edward P. Buford, President of the Virginia Bar Association, we believe:

That the concentration of power in Wash-

ington through the multiplication of the administrative bureaus under a perverted interpretation of the general welfare clause, is the most far-reaching and dangerous of modern legislative tendencies.

The Sheppard-Towner Maternity Act, and the Curtis-Reed Bill (Educational Bill S. 291—H. R. 5000) now pending in Congress are conspicuous illustrations of this method of federal usurpation.

If measures of this character are legitimate exercises of federal power, there is no limit to the possibility of federal exploitation. Every conceivable form of governmental activity may be subsidized by federal taxation, medicine included, and the number of federal office holders be indefinitely increased. To illustrate the latter point, we call your attention to the fact that there are 2,700,000 employees on the payroll of the Federal and Local Governments of the United States, and 700,000 former employees drawing pensions. In 1860 one person in every thousand population was on the public payroll; in 1895 the ratio had increased to one in one hundred, and today, every group of 11 citizens are supporting one person on the public payroll.

Under the practice now prevailing, new bureaus are created and the power of legislation is delegated to them. They are given authority to write the laws they are to administer and to change them at pleasure. In other words, they are clothed with full legislative and executive powers and to some extent with judicial powers. In other words, these bureau heads are judge, jury and prosecuting attorney and hangman, all the powers being delegated to the one person.

THE SECRETARY OF THE U. S. TREASURY SHOWS FUNDAMENTAL OBJECTIONS TO THE SHEPPARD-TOWNER-NEWTON BILL

The statements of Secretary of the Treasury Mellon published in the *Woman Patriot* of February 1, 1929, are highly instructive and educational. We quote:

Secretary of the Treasury Mellon has stated a fundamental objection to all blanket bills appropriating vast lump sums to any bureau or department to expend at discretion, in his letter of January 12, 1929, to Senator Warren, Chairman of the Senate Finance Committee, and in his letter to Bishop James Cannon, Jr., of the Methodist Episcopal Church, South, respecting the proposal to appropriate $25,000,000 for the Secretary of the Treasury (or the President, as later proposed in the Senate) *"to spend as he sees fit"* on prohibition enforcement. Secretary Mellon's remarks apply even more strikingly to the Newton Bill proposal to turn over $1,000,000 a year to the Chief of the Children's Bureau *to distribute as she sees fit* on "child welfare extension," which is *not, like prohibition, within the scope of the Constitution* or the powers therein conferred on Congress.

Secretary Mellon says in part:

"I note in your telegram you suggest that the restrictions be removed and that $25,000,000 be made available to the Secretary of the Treasury to *spend as he sees fit.* . . . I want to suggest whether you consider it good practice to place so vast a sum in the hands of a public official *with unlimited discretion as to its use?* It makes no difference whether that official be the Secretary of the Treasury or some other chief of an Executive Department of Government, I do not believe that adequate protection of the public interests and the proper safeguards that should always surround the expenditures of public funds can fairly be said to have been provided for if an appropriation *of this character* is made. Such a program would *break down the safeguards* of the Budget System, and the effective and proper control which Congress exercises over the expenditure of public funds. I think that upon second consideration you will realize that this is not a minor question, but a fundamental one, and that in the long run, whether in the prohibition *field or in any other field of government,* infinitely more is lost than gained if for the sake of accomplishing immediately a purpose, no matter how desirable, a fundamental principle of good government and sound practice is violated."

(*Letter to Bishop Cannon.*)

" . . . I assume, of course, that if any such large sum is to be appropriated, the Congress will desire it to be used with the utmost effectiveness and in a way calculated to bring about the greatest results . . . I do not believe that any such large sum as is provided for . . . should be appropriated . . . until it can be determined how any increased amounts can be most wisely and effectively expended. In other words,

I am not prepared to say that prohibition enforcement can not be made more effective by the expenditure of increased amounts for this purpose, but I do feel that *no such appropriation should be made* until they can be definitely allocated to certain specific purposes, and that any other method of procedure will necessarily result in the extravagant use of the public funds." (Letter to Senator Warren.)

If, *"a fundamental principle of good government and sound practice"* would be violated, as Secretary Mellon declares, in turning over a vast sum, even to him, a Cabinet officer, "to spend as he sees fit" *even for the purpose of enforcing a constitutional amendment,* how much more would it be violated by turning over a $1,000,000 a year *campaign slush fund* to the Chief of the Federal Children's Bureau to spend or distribute *"with unlimited discretion as to its use"* for "child welfare extension," "independently or in cooperation" with "child welfare *or other* local *associations or individuals"* without having the faintest excuse, under the Constitution of the United States, for "child welfare" appropriations by the Government itself, much less for "matching" and distributing such funds among private "social" agencies, such as Hull House, Henry Street Settlement, etc.!

The Newton bill, as an outrage against the Constitution, not only, but against *any* fundamental principle of safeguarding public funds against waste, extravagance, corruption and graft, is revealed so clearly by Secretary Mellon's statement, that it is difficult to see how any honest Member of Congress who remembers his oath to support the Constitution and his duty to safeguard appropriations from the people's Treasury, can possibly vote for it.

HERE IS THE EVIDENCE. THE SHEPPARD-TOWNER ACT IS THE FORMIDABLE BEGINNING OF A COMPREHENSIVE SYSTEM OF GOVERNMENTAL MEDICINE

The *Chicago Journal of Commerce,* a recognized financial and commercial periodical, recently made the following comment on the preparatory activities of the Children's Bureau of the Department of Labor as to the proposed extension of the Sheppard-Towner Act:

When a periodical of high class in the lay press takes so decided an attitude upon so critical a question does it not behoove the more indolent of the medical profession to convince themselves that the columns of the ILLINOIS MEDICAL JOURNAL do not exaggerate the current crisis in medical economics?

"The children's bureau of the department of labor is now preparing its campaign for a renewed extension of the Sheppard-Towner government medicine act, the authorized appropriations for which will expire June 30, 1929. At the next session of congress a drive will be made for renewed appropriations.

"It is the purpose of the paternalists and bureaucrats to make the Sheppard-Towner government medicine act a permanent piece of legislation, and to keep the federal government forever in the business of paying money to the states for local medical and nursing work.

"The Sheppard-Towner act is called a "maternity and infancy act." It has been represented as an invaluable aid to mothers in childbirth, and to infants under 1 year of age.

"But in fact the operations of this law are not limited in this fashion. Instead they cover a large part of the general field of medicine and medical research. The Sheppard-Towner act is the formidable beginning of a comprehensive system of government medicine.

"For the fiscal year 1927 the federal government paid to the state of Kentucky the salaries of a state health officer, a health director, an assistant director, a clinical instructor, a chemist for water and milk supply, an inspector of birth registration, an educational instructor, a stenographer, a bookkeeper and six clerks.

"In Georgia the federal government paid for the distribution of free diphtheria toxin-antitoxin to clinics for the immunization of children under 7 years of age. This was a highly valuable work. But it certainly violated the promise that the Sheppard-Towner act would be used only for the benefit of mothers in childbirth and of children under the age of one year.

"In Colorado the federal government paid for what has been described as 'special work' with the boys' and girls' clubs at the state fair.

"In California the federal government paid for the distribution of pamphlets dealing with tonsils and adenoids.

"In Iowa the federal government paid for

dentists and nurses in dental conferences and clinics for children up to 7 years of age.

"In Maryland the federal government paid for a survey of crippled children.

"In New York the federal government paid for an orthopedic clinic, consisting of a traveling unit comprising two orthopedic surgeons, eleven field nurses, and one muscle-tester.

"These are only a few of numerous items showing the extent to which the federal government's money, under the Sheppard-Towner act, is being employed not only to lessen the deaths 'connected with childbirth, and among infants under 1 year of age,' which is the professed purpose of the act, but for health work among children in general, including educational work in boys' and girls' clubs.

"What is being done in the case of children can readily be done in the case of adults. A bureaucracy tends to exalt itself by extending its power. The Sheppard-Towner act is the well-defined beginning of a general system of federal government medicine. It is paternalistic, it is bureaucratic, and in sober truth it is socialistic.

"If socialism can be applied to the medical profession, it can be applied to other professions and to business in general.

"When the proposal for another extension of Sheppard-Towner appropriations is made at the next session of Congress, it ought to be defeated. It probably will not be. Masked socialism is not encountering many defeats in the United States. It is winning again and again, because business is asleep."

The fact cited above shows conclusively the entrance of the government in the practice of medicine on the most intensive scale possible.

The fundamentals underlying the whole scheme are detrimental to the best interests of the country, it understands the stability of the nation.

If socialism can be applied to the medical profession it can be applied to other professions and to business in general.

Carried to a possible conclusion it means government bread, government pills, government clothes, government shoes, government rent out of the same bag.

ANTI-VIVISECTION LEGISLATION IN ILLINOIS

We have been assured through the public press and by radio talks over station WCFL that Senator Thomas J. Courtney will introduce in the State legislature an anti-vivisection bill at this session. The bill is backed by the Illinois Anti-Vivisection Society. No doubt by the time this number is off the press the bill will be before the legislature.

Elsewhere in this issue we publish data which will be of material assistance to doctors, members of the Woman's Auxiliaries and lay organizations as a basis for talks before clubs, organizations, etc., in opposition to anti-vivisection legislature.

MAN'S DUTY TO HUMANITY IS OF MUCH GREATER IMPORTANCE THAN MAN'S DUTY TOWARD DUMB ANIMALS — ANTI-VIVISECTION AGITATION NEWEST CURSE OF HUMANITY

In Illinois, the District of Columbia and perhaps elsewhere over the country are springing up plans for the introduction by law-making bodies of many bills and other prohibitions forbidding continuance of animal experimentation.

Man's duty toward dumb beasts is one of the inherent truths of civilization, but man's duty to humanity is of such a much greater scope that any criticism of the very small sacrifice of animals necessary to preserve millions of human beings, in fact, the very race itself, is not even a study in comparatives based on the ratio of benefits obtained.

Anti-vivisection defeats the aims its serves. Not only do human beings receive almost incredible assistance from animal experimentation but stockmen and breeders admit that their stock and herds derive incalculable assistance from the results of animal experimentation. It is doubtful if the percentage of animals used for research work in this regard and who thus come to an end different than that which in the due course of nature might be expected to be theirs, in any way approximates the number of physicians and nurses who quietly lay down their lives every year in the discharge of their

duties without a whit of agitation as to these "martyred humans."

That the sentimentalists and the uninformed, and the misinformed are on the way to make a costly mistake by all this anti-vivisection agitation seems to be well indicated. Notwithstanding the rational aspects of the case so much sentimentalism is being broadcasted over the country as to the suffering of animals "martyred and butchered" by science that both the righteousness of cause and effect are lost sight of completely through a mere and trivial detail of the process.

The medical profession is not a company of sadists whether it is worse to let a single animal suffer for a comparatively brief space of time or for thousands, aye, hundreds of thousands of children to die in the lingering agony of diphtheria or dozens of kindred ailments conquered by the medical profession through the results of animal research is a question admitting of but one answer. Hundreds of thousands of mothers and fathers have been spared to love, to rear and to support their families as a result of knowledge obtained through animal experimentation in the realm of abdominal surgery. It is doubtful if ten per cent of this number of animals were sacrificed to secure these results.

Further, treatment of "specimens" is better by far than the average animal, outside of the blooded or household pet, receives at the hands of the community. How many anti-vivisectionists inveighing against the scientific ways of animal experimentation in dogs, for example, can boast the possession of a single such household pet? Dog lovers in this instance are seldom of those who bother to care for a house pet in these days of economic and housing complexities.

Not only has animal experimentation provided vaccines, bacterins and anti-toxic serums: aided in the development of new methods of surgery and reliable means and methods of the diagnosis of infectious diseases and in other problems of civil life, but the result of animal experimentation was an invaluable aid to defense during the war. From such work it was learned how to use gases, how to defend soldiery against such enemies, and in the absence of this knowledge the aftermath of the war would have been not only additional thousands of men dead but additional thousands of cripples.

Appallingly destructive live-stock plagues have been quenched through methods obtained from animal experimentation. This in turn has acted to prevent hunger and starvation from becoming universal in some parts of the world. Experiments with animals have done as much good to the animals themselves as to the human beings who guard them, as a later epitome will evidence.

Without abundant healthy live-stock the result of animal disease control it has been computed by experts there is a great question as to whether there could be produced food enough for the present population. Similarities between the human and the animal physiology, as stated previously, have resulted in discoveries useful to veterinarians, stockmen, hygienists and physicians. Economists, too, must be brought into the calculation, as live-stock convert into human food tons of otherwise inedible foliage, shrubs and grasses and other vegetation.

Vasomotor mechanism, capillary circulation, circulation of the blood, functions of the nervous and digestive system, significance of the endocrine glands, and in general, pathology, physiology, therapy and biochemistry have benefited from animal experimentation.

Thanks to animal experimentation, the Panama canal, known in its initial stage as "The yellow lane of death" and abandoned by the French after a cost of 20,000 lives, became a successful project with the abolition of yellow fever, the passing of which scourge could never have been accomplished without *animal experimentation.*

During the present congress a bill was introduced to prohibit the use of animals for medical purposes in scientific investigation in the District of Columbia. This is but a flare. Preliminary bonfires in this war have already started in other sections of the country. The idea is to make it almost impossible to obtain dogs upon which to experiment. There will follow acts to exclude from laboratory use the horse, the guinea pig, the rabbit and the rat. For the present the only topic as a premise to fight that is practical politics is the obtaining and use of dogs without violation of the law. On this point science has almost lost the fight. In the state of Connecticut the anti-vivisection-

ists have so managed things that a dog can't be got for less than $5.00 and such costs are added as makes this minimum cost about $8.00 per dog. In case medical laboratories try to start a dog farm for laboratory use the next step of the vivisectionists can be imagined. Humane societies sponsoring anti-vivisection activities are conscientious but their consciences are prejudiced and not fair and wise in their choice of perspective as an epitome of the results of vivisection show.

Introduction of this bill in Congress is the first gun in a countrywide campaign. After success in the District of Columbia the fight will be carried into each of the forty-eight states, hence this bill now before Congress is of crucial importance. It should not be met merely by pious information as to the humane practices of science but the American Medical Association and various state associations should have introduced a bill in all legislatures that all dogs collected by humane societies or confirmed stray dogs might be used by science in the interest of the public weal. Such a bill would be analagous to the anatomic acts of many states. Similar measures should be introduced into the legislature of each of the forty-eight states. Dogs are a necessary adjunct to scientific research and scientific research is a necessary adjunct both to the preservation and the progress of civilization. Briefly epitomized here are a few of the advantages resulting to the race from animal experimentation.

Animal experimentation known as vivisection and that branch of science fought so bitterly by anti-vivisectionists has to its credit much alleviation of the woes of humanity. Millions of human lives have been saved through the results of experiments in vivisection. Among the achievements aiding public welfare and saving human life that have resulted from animal experimentation are these discoveries, developments, alleviations, panaceas and cures.

A BRIEF FOR VIVISECTION—WHAT ANIMAL EXPERIMENTATION HAS DONE FOR MANKIND AND ANIMALS

Vivisection or animal experimentation is *absolutely indispensable* to progress in the prevention and cure of human disease, and accident.

Hundreds of thousands of American people living today owe their lives to advancement in medical science, progress in which has been made possible only through the medium of experimentation on animals.

Even the life of animals themselves has been made more secure through the medium of animal experimentation and vivisection.

Further progress in the reduction in sickness and mortality is possible and to a most important extent depends upon further experimental procedure of this nature.

To retard the progress of medical research by the abolishment or unnecessary restriction of animal experimentation is needlessly to sacrifice the lives of hundreds of thousands of human beings—and also of animals.

Some conception of the very material advances that have been made in the prevention and treatment of diseases or results of accidents, advances that have been made possible chiefly through the medium of animal experimentation or vivisection, may be gained from the following summary:

1. Dog distemper: Discovery of vaccine as prevention and serum for cure of distemper in dogs, announced in England, November 29, 1928, as a result of five years' research conducted by the Mill Hill Laboratories of the Medical Research Council on behalf of the Field Distemper Fund and its subscribers.

2. Typhoid fever: Use of anti-typhoid serum during the world war effected a reduction of the deaths from typhoid fever to 200 out of 2,000 cases among 4,000,000 men mobilized, as against 2,000 deaths in 20,000 cases of typhoid and less than 150,000 men mobilized in the Spanish-American War. In other words, this serum reduced the death rate ratio in the world war from a probable 56,000 deaths and 560,000 cases, had the same ratio prevailed as during the Civil and the Spanish-American wars.

3. Diphtheria: Use of antitoxin has reduced death rate in diphtheria to seven and eight-tenths (7.8) per hundred thousand population, as against a previous mortality of as high as eighty-five (85.) per hundred thousand, or a reduction of about ninety per cent. These figures naturally fail to include any statistics as to the morbidity and permanent disability prevented by this discovery.

4. Smallpox: Vaccination, resulting from animal experimentation, has practically elimi-

nated this scourge from civilized countries, thus short circuiting a disease of successive epidemics each of which killed millions and disfigured millions more. Indeed, true smallpox has become a rare disease today because of vaccination, and in cases where inoculation has been done, there is seldom if ever smallpox disfigurement.

5. Yellow fever: Findings of animal experimentation coupled with those from human sacrifice have practically abolished yellow fever, one of the scourges of the civilized world.

6. Plague: Through anti-plague serum, this disease with its death rate that ran as high as ninety (90) per cent., is no longer an element to be dreaded; in fact, is comparatively unknown. Animal and human experimentation demonstrated the cause and mode of transmission of this disabling and deadly disease, that cost the lives of hundreds of thousands yearly and brought complete for partial disability annually to hundreds of thousands more.

7. Malaria: Through experimental inoculation, ravages of this deadly disease have been reduced to the vanishing point. Its complete abolishment is only a matter of time.

8. Lockjaw: Anti-tetanic serum prevents the previously fatal lock-jaw resulting from operations and after accident, and is a specific for mortality from this infection.

9. Hydrophobia: Rabies vaccine has reduced the death rate from hydrophobia, previously uniformly fatal, to a fraction of one per cent., and the danger of possible infection from hydrophobia is daily minimized by the increasing administration of preventive serum to dogs, thus saving the dogs as well as the people.

10. Epidemic cerebro-spinal meningitis: Serum treatment has reduced death rate from ninety per cent. to less than 20 per cent., and minimized ensuing deformities.

11. Pneumonia, most deadly of diseases: Through animal experimentation a serum has been discovered that has reduced the mortality in type I of this much dreaded disease from 25 per cent. to 7½ per cent., and a vaccine has been perfected that has reduced the mortality in all four types of pneumonia from 40.5 per cent. to 21.2 per cent., or approximately a 50 per cent. mortality reduction in all types of pneumonia has been achieved as a result of animal experimentation. Further experimentation is sure to bring about complete control, cure and prevention of this much dreaded disease.

12. Tuberculosis: Due to animal experimentation, to a large degree, tuberculosis has been reduced 50 per cent. in twenty-five years. The early diagnosis of tuberculosis is often made and the patient's life saved through the sacrifice of a guinea pig, when the diagnosis could not be made by any other method. What is the life of a thousand guinea pigs to that of a single child?

13. Antiseptic surgery: Discovery of antisepsis and opening up of miracles of modern surgery are due to animal experimentation. Emphasis must be laid upon the development of the abdominal branch of this section of medicine by which is made possible operative treatment of stomach, appendix, liver, gall-stones, intestines, pancreas, bladder, spleen, kidneys, generative organs: modern surgery of the brain and surgery of the chest, including surgery of aorta, lungs, heart, esophagus, etc.: in fact, made possible all the wonderful results of modern surgery, and a saving of thousands of lives annually and incalculable pain, invalidism and poverty.

14. Compound fracture: Reduction of death rate after compound fractures from sixty-six in a hundred to two or three out of a hundred, or a reduction of 97 per cent.

15. Ovariotomy: Reduction of death rate from sixty-six out of one hundred to merely two or three out of one hundred, or another 97 per cent. reduction. What a debt of gratitude the women of the world owe to animal experimentation in having made possible this great life-saving from surgical operations peculiar to their sex.

16. Post-operative mortality: Reduced to a negligible factor in such conditions as hernia, tumors and amputation of the breast.

17. Blood transfusion: Through animal experimentation has been perfected a method of direct transfusion of blood from person to person. Blood transfusion saves thousands of lives annually.

18. Goiter: A practically safe operation for this condition has been developed with the aid of animal experimentation.

19. Malta fever, formerly a scourge in Malta and Mediterranean countries, India, China,

the United States, Brazil, and the West Indies has been almost completely abolished.

20. Maternity mortality: Childbed fever reduced from ten out of every one hundred mothers to less than one in one thousand.

21. Syphilis: Discovery of remedy to protect innocent wives and mothers and unborn children as well as others in the community at large from the horrible curse of syphilis. The presence of syphilis in patients is now discovered in ten cases where formerly it was discovered in only one. This advance in diagnosis is attributable to animal experimentation.

22. Sleeping sickness: Through experiments on animals our knowledge of the pathology, methods of transmission, and the means of treatment of the fatal "sleeping sickness" has been obtained. Because of the information thus gained successful treatment of this disease is now possible.

23. Glandular therapy: Discovery of the mysterious functioning of various endocrine glands through the medium of animal experimentation has developed information and has brought to the women of this country incalculable relief from suffering from many diseases and conditions incidental to their sex. Millions of women are now spared unnecessary suffering, thanks to animal experimentation.

24. Animal scourges: Knowledge of animal diseases, their causes, treatment, cure and prevention, have been greatly advanced chiefly through the medium of animal experimentation. Such animal diseases as tuberculosis, rinderpest, anthrax, glanders, hog cholera, chicken cholera, lumpy jaw, among others, some of which are conveyable to man, are being overcome successfully through the medium of this experimental service. If the suffering dumb creatures could but speak, they, too, would pray that this good work should continue unhindered. The number of their own kind sacrificed is indeed small as measured against the number of their own kind benefited.

Prevented a More Costly War.—Animal experimentation has provided vaccins, bacterins, and antitoxic serums; it has aided in the development of new methods of surgery and of reliable means of diagnosing infectious diseases; it taught us how to use gases during the war and how to defend our soldiery against them. In the absence of such knowledge the recent war would have cost additional thousands of lives and would have produced many additional thousands of cripples.

Basic Knowledge.—Animal experimentation has resulted in the following basic knowledge: Circulation of the blood; capillary circulation; the vasomotor mechanism; functions of the nervous system; the flow of chyle in the lacteals; the passage of chyle through the lymph ducts into the venous circulation; the nature of the digestive fluids and chemical transformation of food through their action; functions of the liver, lungs, kidneys, and other organs; the reaction of the cells to various kinds of stimuli; significance of the endocrin glands; nature of inflammation and other pathological processes; and numerous other discoveries in physiology, pathology, and biochemistry.

Action of Drugs.—Experiments with live stock have contributed richly to the current knowledge of drugs and their uses and to the precise information we have of the therapeutic, physiologic, and toxic actions of the innumerable substances from which our useful drugs have been selected.

Without specific knowledge of how drugs act on the body as a whole, or on special parts of the body, and whether their action is immediate or cumulative, the death rate among persons and animals would be multiplied, and the greater losses among the latter would be a serious economic disadvantage.

In April, 1914, when Mr. Rockefeller gave $1,000,000 for the extension of the work of the Rockefeller Institute to include a study of animal diseases in a laboratory to be established in New Jersey, the antivivisectionists persuaded the Governor of that state to veto the bill authorizing this eminently humane work!

25. Cancer: A rapidly increasing disease awaiting solution. This disease will be conquered eventually through knowledge acquired from animal experimentation. Among women in this country one out of every seven die from cancer and, therefore, anything that will assist in eradicating cancer should be hailed as a civic necessity and should be encouraged to the utmost by all women as well as by all men. As animal experimentation is essential to attainment of requisite knowledge, it stands to reason that all right-thinking people should foster rather than

attempt to disparage the proper conduct of such investigational studies.

In the light of past accomplishments and with awareness of that which is yet to be done, who is there among us who, having love for his fellow men, dare to stay the hands of those who are attempting to lift the curse of disease or aftermath of accident from the shoulders of his fellows? If there be any such inhuman creatures, enemies of our children, of humanity in general and even of dumb brutes, let them stand up and be labeled. Upon these persons, should they be successful in staying the march of medical progress by placing barriers against essential experimentation upon animals, must rest the responsibility of human lives needlessly sacrificed, and of dumb brutes condemned to suffering.

That there are such misguided persons is a community misfortune. They are commonly known as "anti-vivisectionists," but the evil they inspire and the mischief they do is beyond calculation.

Although much has been accomplished, much more remains to be done. Cancer, infantile paralysis, cerebro spinal meningitis, pneumonia, influenza and malaria are among the devastating diseases that are yet to be conquered. The hope for early victory hinges chiefly if not wholly upon further animal experimentation.

As opposed to the extraordinary list of triumphs for humanity, compare the "achievements" of the anti-vivisectionists:

CRIMES OF OMISSION CREDITED FOES OF ANIMAL EXPERIMENTATION

1. Not a single life has been saved by efforts of antivivisectionists.

2. Not a single beneficent discovery has been made by them.

3. Not a single disease has been abated or destroyed or cured by them, either in animals or in man.

4. All that they have done is to resist progress—to spend $500,000 in thirty years in Great Britain alone, and millions in the United States and elsewhere, and to conduct a campaign of abuse and gross misrepresentation, from which the harvest is easy to prognosticate from present results.

5. They care apparently little or nothing for the continued suffering and death of human beings, or the grief and not seldom the ensuing poverty of their families; provided that twenty-six out of every thousand dogs and cats, monkeys and guinea pigs, mice and frogs experimented on shall escape some imaginary physical suffering. Somehow, antivivisectionists fail to appreciate the fact that millions of animals are spared much suffering as result of animal experimentation.

6. They insist, therefore, that all experimental research on animals shall stop and—astounding cruelty—that thousands of human beings shall continue year after year to suffer and to die, to become invalided and often not only burdens to themselves but economic liabilities to the community, their families and society.

VIVISECTION BRIEFS

If the scientists who experiment on animals were the cruel, cold blooded butchers pictured by the anti-vivisectionists, even so, yet the animals used by them would be given the greatest possible comfort, and the greatest possible relief from pain and shock and the greatest possible after-care *because the success of the experiment would require that very consideration.*

* * *

Every one who has had his life saved by an abdominal operation should realize that the operation would have been impossible and he would be dead if animal experimentation had not developed aseptic surgery. This applies to many of the infectious diseases, formerly fatal and now amenable to specific treatment, made possible by animal experimentation.

* * *

One horse furnishes antitoxin which saves thousands of human lives—and the horse continues to live with more comfort and better care than many humans about whom anti-vivisectionists do not worry.

A LAYMAN'S DEFENSE OF VIVISECTION

Harry C. MacLeod, S. J., in a recent issue of *America,* is worthy of reproduction. It is as follows:

THE MENACE OF VIVISECTION

To the Editor of America:

In the article in *America* for July 21 on "The Menace of Vivisection," by C. H. Robson, I

find the idea expressed throughout that vivisection has done no good. If the writer of that contribution believes that Dr. Hurwitt, in his "vivisection article," did not sufficiently prove his so-called "sweeping statements," then the following data, taken from the Army and the Board of Health reports will substantiate them.

Mr. Robson cited the *Medical Journal* for December, 1922, where Dr. J. Bruce McCreary of the State Department of Health said:

> Active as have been our efforts to control diphtheria through laboratory study and diagnosis, isolation of cases and carriers, free anti-toxin and immunization by anti-toxin, the morbidity figures and death rate remain about the same.

To cast no reflection, however, on Dr. J. Bruce McCreary's knowledge, I ask him to recall that the experimentation by vivisection cut the death rate in nineteen European and American cities from 79.9 per 100,000 population in 1894, when anti-toxin treatment first began, to 19 deaths per 100,000 in 1905, and that since that time the dread of the disease has almost reached its nadir. Again he writes:

> What little improvement there has been in the tuberculosis situation has been owing to better housing, education of the public, superior sanitary conditions, open air treatment; vivisectional medicine has given us nothing of the slightest value in cure.

This, however, is rather a sweeping statement and it would seem that the writer forgot that vivisection was the first to discover that tuberculosis was contagious. The famous discovery of Koch has cut down tuberculosis from fifty to thirty per cent. And we might add here the reason for our National Board of Health that has insisted on the sanitary conditions that have been enforced. In 1878, no fewer than 16,000 deaths resulted from yellow fever that was common in the United States at the time, with an economic loss of some $100,000,000. By vivisectional experimentation on dogs the mosquito was found to carry the germs and although Lazear was bitten by one of the mosquitoes and lost his life five days afterwards, Walter Reed perfected the theory and the National Board of Health came into existence.

With regard to typhoid, the German army in the Franco-Prussian War had 73,346 cases, about ten per cent of the average strength. The Civil War army of the Potomac in four years, from July, 1862, to June, 1866, had 57,000 cases and 53,000 deaths. Then vaccine was discovered and perfected by Gaffky in 1884 and further perfected by Widal in 1888, by Write in 1896-1897, and by Major Russel in 1909. Animals were indispensable to the standardization of vaccine. The result was that in the World War the United States army, protected by anti-typhoid vaccine and therefore immunized, had only 3,756 cases. Although the men were billetted in unsanitary conditions that were favorable to the disease, for instance, at Chateau-Thierry, where they had to encamp on territory evacuated by the Germans, that was rotten with the dead bodies of horses and men, pools of human waste and myriads of flies, yet of those 3,756 cases which occurred between September, 1917, and May 2, 1919, there were only 213 deaths. If this fact is not a glowing testimony to vivisection I do not know what is.

There are countless other facts which could be set down as triumphs of vivisection, but let these suffice, since Mr. Robson mentioned only the above.

Although vivisection has been vigorously opposed, can the anti-vivisectionalists show any result that has accrued to humanity by their efforts? Nothing can be shown to their advantage. The only positive result they can show is an expenditure of over $500,000 in Great Britain alone to conduct a campaign of abuse and misrepresentation.

I wonder if Mr. Robson should be attacked by diphtheria or lockjaw would he waive all medical knowledge of the cure obtained by vivisection? His first act would be to apply for anti-toxin.

If such men as these would stay the hands of men who have made abdominal surgery, surgery of the brain, chest, heart, lungs and aorta possible, who have reduced the death rate in ovariotomy and found a cure and protection for innocent wives and unborn children and for the community at large from syphilis by 606 Salvarsan and 909, and who may in future banish the terrors of infantile paralysis and scarlet fever and measles from our children, and of cancer from the whole human race, if these men hinder such efforts and do all they can to pro-

hibit them, are they to be considered "benefactors of humanity"?

Woodstock.

AMERICAN COLLEGE OF PHYSICIANS

Thirteenth Annual Clinical Session

Boston, April 8-12, 1929

The American College of Physicians will hold its Thirteenth Annual Clinical Session in Boston, April 8-12. Dr. Charles F. Martin, Dean of the Faculty of Medicine, McGill University, is President of the College this year, and Dr. John H. Musser, Professor of Medicine at Tulane University Medical School is President-Elect and will be inducted to the Presidency toward the end of the Boston meeting. Dr. James H. Means, Jackson Professor of Clinical Medicine at Harvard Medical School and Chief of the Medical Service at the Massachusetts General Hospital, is General Chairman of all Boston committees having charge of arrangements for the Clinical Session of the College in April.

The program provides hospital visits, clinics, demonstrations and ward-walks during forenoons at fifteen different Boston hospitals, and for general scientific sessions each afternoon and evening in the assembly room of the Hotel Statler, which will be headquarters. Eminent authorities in their special lines will present the results of their work before an audience competent to appreciate the value of the contributions.

A Symposium on Deficiencies will take place the first evening of the session, and will be of particular interest because of the fact that deficiencies are nowadays assuming a far more widespread and important role than had heretofore been anticipated. They have come into their own as factors producing acute and chronic disease on a par perhaps with infections. The committee has secured for the program men who can speak with authority on a variety of aspects of this important subject.

Another special feature is a review of the Present Status of Vaccine and Serum Prophylaxis and Therapy, designed to give the internist a rapid survey of the field. The speaker, Dr. Benjamin White, of Boston, is an authority on these subjects and can give the high spots in rapid and yet forceful fashion.

The annual Banquet of the College will be held Thursday evening, April 11, when Dr. George E. Vincent, president of the Rockefeller Foundation, will deliver the chief address. The Convocation, for the conferring of Fellowships, will take place Friday evening, April 12. Dr. Charles F. Martin, of Montreal, will deliver the Presidential Address.

Programs and details concerning reduced fares, admission, etc., may be secured from the Executive Secretary, E. R. Loveland, 133-135 S. 36th Street, Philadelphia, Pa.

CONSTITUTIONALITY OF ILLINOIS MEDICAL PRACTICE ACT

(Ramsey v. Shelton et al. (Ill.), 160 N. E. 769)

The appellant filed a bill for an injunction in the superior court of Cook County, against the director and assistant director of the department of registration and education, the superintendent of registration, and members of a committee styled "professional committee of physicians." The committee was designated by the director of the department of registration and education to hear and make report on a complaint filed against the appellant, to revoke his license as a physician and surgeon. The appellant sought to restrain the appellees from further consideration and hearing of evidence before the professional committee. A temporary injunction was granted, answers were filed, and the cause was referred to a master, who found in favor of the appellant. Exceptions to the master's report were sustained by the superior court, and the bill was dismissed for want of equity. The appellant thereupon appealed to the supreme court of Illinois.

Section 60 of the Civil Administrative Code of Illinois designates the powers of the department of registration and education in carrying out the various statutes relating to professions, trades and occupations. It provides that certain of the enumerated functions of the department shall not be exercised "except upon the action and report in writing of persons designated from time to time by the director of registration and education." It provides further that for medical practitioners the five persons so designated shall be reputable physicians, licensed to practice medicine and surgery in Illinois, no one of whom shall be an officer, trustee, instructor or stockholder or otherwise interested, directly or indirectly, in any medical college or medical institution. The appellant contended that four of the five members of the professional committee were at the time of the hearing connected with one or more medical institutions and therefore ineligible to serve. To this the appellees replied that while members of the committee were connected with various hospitals, a hospital is not a medical institution. It is apparent, said the court, that the legislature intended that a hospital which instructs in the science of medicine or healing comes within the definition of a medical institution. General hospitals not giving courses in medical instruction do not come within the provision of the act, nor do medical societies or hospitals in which instructive lectures may from time to time be read constitute medical institutions where medical science is taught as contemplated by the act. The act must, however, by its most restricted application, be held to apply to medical institutions in which courses of instruction, whether graduate or undergraduate, are given. The Chicago Polyclinic Post-Graduate School (or Chicago Polyclinic) is an institution where postgraduate courses are given in the science of medicine and is a medical institution within the

meaning of the language and intent of the act. Three of the committee hearing the charges against the appellant were at the time of such hearing so connected with the Chicago Polyclinic as to disqualify them for services in that capacity. It follows that the committee was without authority to proceed further with the hearing of the charges. This being so, the chancellor erred in refusing to issue the injunction as prayed.

In urging that the act was unconstitutional, as depriving licentiates of due process of law, it was pointed out that the act did not provide for notice, calling of witnesses, and review by a court. It was held, however, in *People* v. *Apfelbaum*, 251 Ill. 18, 95 N. E. 995, that the granting and revocation of a license to practice medicine is not the exercise of judicial power as that term is understood in referring to the distribution of the powers of government; that, while in the administration of the law, the state board of health, then charged with the duty of issuing and revoking licenses, necessarily exercised discretion and judgment, and while its proceedings were to that extent judicial in character, its proceedings were not for a court nor appropriate for a court. The revocation of a license to practice medicine is not intended as punishment for any offense, but for the protection of the public by the police power of the state. Due process of law does not necessarily imply judicial proceedings. Orderly proceedings according to established rules which do not violate fundamental rights must be observed, but there is no vested right in any particular remedy or form of proceeding. A general law administered in its regular course according to the form of procedure suitable and proper to the nature of the case, conformable to the fundamental principles of right and affecting all persons alike, is due process. The licensing board cannot from mere caprice, without cause, revoke a certificate. The statute requires a hearing before a certificate can be refused or revoked, and necessarily implies notice of such hearing and an opportunity to defend. The power to revoke a license cannot be exercised except on action and report in writing of five reputable citizens, licensed to practice medicine and surgery, selected by the director of registration and education to conduct a hearing on the charges preferred. Where there is no notice or hearing and a record thereof preserved, the party aggrieved may have a review of the proceedings by certiorari. The contention of the appellant that the medical practice acts of Illinois involved in this case are indefinite and that the terms "unprofessional" or "dishonorable conduct" cannot be made the basis of an action in revoking a license was decided contrary to the contention of the appellant in *People* v. *Apfelbaum*, heretofore cited.

The decree of the court below was reversed and the cause remanded with directions to grant the relief prayed in the bill.—*Journal of the American Medical Association, February 16, 1929.*

Correspondence

THE DAY IS NOT FAR DISTANT WHEN THE PUBLIC WILL DEMAND FROM OUR TAX SUPPORTED INSTITUTIONS FREE TREATMENT FOR ALL THE AILMENTS TO WHICH HUMAN FLESH IS HEIR

Drs. Morris and Neece
Standard Life Building
Decatur, Ill.

February 21, 1929.

To the Editor:

We have heard considerable criticism directed toward the University of Chicago on account of its aggressive program and advertising methods. Our local paper of last Tuesday evening carried a full page ad, "What University of Illinois Is Doing to Curtail Human Wreckage" (see below), which I am enclosing. I suppose the object of this is to acquaint the dear public with the work of the University and her larger program and to crystallize public opinion in favor of a tax levy sufficiently large to make this enormous building program possible. It seems to me that the day is not far distant when the public will demand from our tax supported institutions free treatment for all the ailments to which human flesh is heir.

I. H. Neece, M. D.

The following is produced from the page advertisement. The numbers on the following data refer to elaborate pictures of university buildings and individual operators working in the various departments.

The only project of its kind in the world is that backed by the State of Illinois in which the University of Illinois and the State Department of Public Welfare coöperate for the good of humanity. It is located in Chicago and has for its objects (1) to provide medical treatment for charity cases of the State, within the limits of the facilities at hand; (2) to give young men and women training in medical education; (3) to help practicing physicians of the State to keep in touch with the latest and best methods of preventing and curing disease, and (4) to seek to determine the causes of disease and, on the basis of the acquired knowledge, to institute preventive measures.

1. The Research Hospital and University of Illi-

nois medical group as it will look when completed.
2. Incoming Child Patient.
3. Entrance to Research Hospital.
4. Registration Desk of Clinic.
5. "Weighing in" at the Children's Clinic.
6. Clinic Quadrangle.
7. Research Laboratory and Library.
8. Stretching a curved spine in the Orthopedic Clinic.
9. School of Pharmacy of the University of Illinois.
10. University of Illinois College of Dentistry.

PAY PATIENTS NOT WANTED AND ARE NOT PERMITTED AT THE UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE

To the Editor:

The College of Medicine of the University of Illinois grew out of the College of Physicians and Surgeons of Chicago. The latter institution was organized in the early eighties by a group of forceful men interested in the educational features of Medicine. They gathered about them men of note in the profession and developed one of the outstanding medical institutions in the Central West. For many years they trained young men for the practice of Medicine in ways that amply qualified them to render professional service to the people. Throughout this country and in the many remote lands of the world are medical men today trained in this College rendering everywhere invaluable service to the sick.

About fifteen years ago, owing to fundamental changes in medical practice and teaching made necessary by the development of medical sciences, the College, like most other medical colleges, arranged for University affiliation. This was consummated in 1913 by the transfer of the property and staff of the old College located at 508 S. Honore St. to the University of Illinois.

The old buildings at the location just mentioned have been used for years to house the class rooms, laboratories, etc., of the Medical and Dental Departments. They were not designed for the purpose for which they have been used, having been built for public school purposes some forty to fifty years ago. At present they are antiquated, and more or less dilapidated, without adequate heating and ventilation facilities and altogether unfitted for carrying on modern medical educational work.

Ten years ago, in 1919, under the Lowden administration, a comprehensive scheme of State cooperation between the College of Medicine of the University and the State Department of Public Welfare was agreed upon. Plans were made, land was purchased, and a group of hospitals erected on West Polk St. just south of the Cook County Hospital, in what has come to be known as the West Side Medical Center of Chicago. The University agreed to furnish the Medical Service needed for such a group and to carry on teaching and to promote the study of disease with a view not only to cure the sick and relieve suffering, but also to do as much as possible to prevent, at the source, the stream of human wreckage entering our various State institutions.

Following that agreement, this plan of cooperation was put into effect and some progress has been made. Certain difficulties have been encountered naturally in the initiation of a scheme as broad and comprehensive as this was. Problems, some political, some administrative, and some medical, have arisen, and no doubt certain changes and modifications will be necessary from time to time.

At the present time one of the most serious handicaps is the necessity of doing a good part of the work of the first two years in the old buildings on Honore St. referred to above. This is true both for the dental as well as the medical work. New improved buildings designed for the needs of the Institution are greatly needed. Attention has been called to this from time to time to the Legislature, to the Board of Trustees, as well as to other agencies. A year ago these old buildings were condemned by a group of Legislators.

The University, therefore, feels amply justified in asking the present Legislature for an appropriation adequate to house the work now done in the old buildings, the plan being to erect new buildings on the site on W. Polk St., south of the County Hospital. Here adequate space is available in close proximity to the Research and Educational Hospitals and the new library. This would not only furnish suitable buildings, but would also bring the work of the various

departments in much closer association with the available hospital facilities than is now possible.

A short time ago a University Bill was introduced into the Legislature, in which there is a request for $1,500,000 for buildings for the specific purpose of adequately housing the medical and dental departments in improved buildings. Eight years ago a program of development was begun by the University of Illinois and $10,500,000 asked each biennium since. This amount has been allowed by each Legislature with the exception of 1921, when $1,640,000 was not allowed. The University is now asking that a part of this, namely, $1,500,000 for buildings, be restored and used for the Colleges of Medicine and Dentistry in Chicago. Everything considered, this would seem to be an altogether reasonable request. Progress in Medicine and Dentistry has been rapid and will continue to be so in the future. In all of the surrounding States large building projects and adequate medical programs have been launched. At the present time, with our old buildings and equipment, the State of Illinois is rapidly falling to the rear. A State as rich and prosperous and progressive as Illinois cannot afford to do this, and no doubt does not intend to. The members of the Legislature should be urged to support this reasonable request on behalf of Medical and Dental education of the State.

There are other problems that may arise. It is important that the various Hospitals and Institutes now cooperating with the Colleges of Medicine and Dentistry in the Chicago group remain intact. Any effort to dissociate or to develop units either on the part of the University or on the part of the Department of Public Welfare should not be permitted. A unified and properly correlated group of Institutions should be developed and fostered; the primary purpose of all being the welfare and care of the unfortunate wards of the State and the proper training of physicians and dentists and the study and eradication of disease.

Attention is called to the fact that in this group of Hospitals, including the Dispensary which is now operated by the University, only the sick poor of the State are cared for. Pay patients are not wanted and are not permitted in these Institutions and we ask the profession of the State to assist us in confining this work to charity.

D. J. Davis, M. D., Dean
University of Illinois College of Medicine.

MEDICAL BILLS BEFORE THE ILLINOIS LEGISLATURE

The following bills are of more or less interest to the medical profession:

Senate Bill No. 21, Jewell—Creates a sanitary water board to control, prevent and abate objectionable pollution of lakes and water courses.

Senate Bill No. 25, Barbour—Provides for the segregation of persons who are mentally defective to a degree that they have criminal propensities and are a menace to the person or property of others.

Senate Bill No. 40, McCauley—Appropriates $75,000 to the Department of Public Welfare to provide hospital facilities for ex-service men at the Jacksonville State Hospital.

House Bill No. 12, Soderstrom—Provides for the formation and disbursement of a pension fund for aged persons and prescribes penalties for violation thereof.

House Bill No. 48, Green—Amends sections 1 and 2 of act relating to county tuberculosis sanitaria; increases maximum tax from one mill to one and one-half mills on the dollar.

House Bill No. 49, Jackson, N. L.—Requires shippers, importers and producers of milk imported for sale in its natural state in this State to secure a license from the Director of the Department of Agriculture, such license being subject to revocation or suspension upon a violation of the health provisions therein.

House Bill No. 69, Dixon—Provides for sexual sterilization of inmates of State institutions for the insane, feele-minded or mentally defective, in certain cases, with the right to be represented by counsel at a hearing before a special board and with the right to appeal, etc.

House Bill No. 89, Smith—Amends section 70 of the act in regard to the administration of estates. Places physicians' bills and hospital expenses in the first class of demands, instead of in the third.

J. R. Neal, M. D.,
Chairman Legislative Committee, Springfield, Illinois.

EGYPT HAD SEVEN PLAGUES, THE UNITED STATES HAS THREE (the white tuberculosis), (the red) UPLIFT AND (the blue) INDIFFERENTISM THAT ENCOURAGES THE GROWTH OF THE OTHER TWO

THE SHEPPARD-TOWNER AND NEWTON BILL MENACE

Brooklyn, N. Y.

To the Editor:

The following Resolution, presented by me and duly seconded, was unanimously adopted by The Medical Society of the County of Kings (N. Y.) at its stated meeting December 18, 1928. Incidentally our Society has 1,903 wide-awake Medical Citizens whose people have votes, even as you and I—or as yours and mine.

Your readers might be interested and MUST be interested in that third "Whereas" and in Sections 1 and 2 of the Newton Bill upon which it is predicated (Illinois Medical Journal, July, 1928, page 4, column 1, toward the end of Sec. 1, particularly). Illinois (and Massachusetts) and some other States have consistently refused to have any part of the Sheppard-Towner Maternity (Birth-Control) Bill, so if its sponsors could not get their pig over the stile they would bring it under by providing for this partnership between the Children's Bureau of the Federal Department of Labor (using the money of the People of the United States) and a group of Uplifters in the State of Illinois (using the money of a Foundation, for example) and these Uplifters would not need much,—a beggarly $7.49 per 1,000 of population, about $50,000 per annum for your present population in Illinois. With the stage thus set and the 50-50 appropriation feature satisfied, independent of State cooperation, I would like some legal light in Illinois (or Massachusetts or elsewhere) to point out to me just how the Executive, Legislative or Judicial powers of the State of Illinois could prevent the operation of this amplified Sheppard-Towner Maternity (Birth-Control) Bill within the State of Illinois (or elsewhere) the Legislature and the people to the contrary notwithstanding. It is my conviction that when this phase is brought home to the minds of the citizens of the State of Illinois (and elsewhere) something will happen that will jar the uplifters' contemptuous disregard of decency. Egypt had seven plagues, the United States has three—(the white) Tuberculosis, (the red) uplift and (the blue) indifferentism that encourages the growth of the other two. Perhaps this will shake us up:

"WHEREAS, the judgment of THE MEDICAL SOCIETY OF THE COUNTY OF KINGS (N. Y.) in opposing, in 1921, the enactment of the Sheppard-Towner Maternity Bill was confirmed by the A. M. A. in 1922 when it adopted a resolution condemning its administration—and vindicated—when the Congress in 1926 refused to perpetuate its administration and limited it to the definite further term of two years which will end in March, 1929, and

WHEREAS, the friends of the Sheppard-Towner Maternity Bill, unwilling to respect the determination of the people's elected representatives in Congress have determined to perpetuate this part of the work of the Children's Bureau of the Federal Department of Labor and to that end have caused to be introduced, in the Congress, House of Representatives Bill No. 14,070 (May 28, 1928) by Representative Walter H. Newton, of Minnesota, which perpetuates the one million dollars per annum 50-50 appropriation of money, continues the meaningless and ineffective provision against the invasion of American homes by the busybody investigators and whisperers of the Children's Bureau whose activities in the first five years of the Sheppard-Towner Maternity Bill's administration reduced the birth-rate of this country 2.4 to the 1,000 of population, which means 250,000 babies per annum who will never be American citizens—such provisions being meaningless and ineffective because they carry no penalty for such invasion and put it up to the American citizen to protect his home from such invasion either by assault upon the invader or by the very expensive way of a Writ of Injunction, and

WHEREAS, the so-called Newton Bill (H. R. 14,070) goes even farther than the Sheppard-Towner Maternity Bill and provides for a partnership between the United States Government and any group or Foundation, thereby carrying interference, by an employe of a Federal Bureau of a Department of the U. S. Government, into the homes within a State, over the head of the State itself, by way of a private corporation

which is merely a creature of the State by reason of a Charter, and

WHEREAS, the Newton Bill (H. R. 14,070) is subversive of the ideals, traditions and institutions of this Country in that it expands the police power of the State to the point of inhibiting the proper exercise of the triune powers of government—Executive, Legislative and Judicial—and vests all power in an individual or group of individual employees of a Bureau of a Department in the Cabinet of the President and bars the Judiciary from restraining abuse thereof, THEREFORE BE IT

Resolved, that THE MEDICAL SOCIETY OF THE COUNTY OF KINGS (N. Y.), in meeting assembled, December 18, 1928, hereby opposes the enactment of the so-called Newton Bill (H. R. 14,070) introduced May 28, 1928, and urges the Congress (and the members thereof from Kings County in particular) to work and vote to defeat its enactment, and be it further

Resolved, that copy of this resolution be sent to the Congressmen from this County and to the U. S. Senators from New York State and to the Medical and lay press with a request therein implied that they lend their best efforts to the defeat of this vicious legislation."

I shall see that every member of the Committee on Interstate and Foreign Commerce of the House of Representatives shall get a copy of this Resolution to keep company with the copy of my communication to you of July 15, 1928, which you so kindly printed in the ILLINOIS MEDICAL JOURNAL.

Now, if those who read this will wake up their County Medical Societies and their lodges of various Fraternal Societies and their Chamber of Commerce and endorse this resolution or one like it which will point out the contemptuous disregard of decency contained in that 50-50 partnership with busybodies over the determination of the people of a State voiced by their representatives in the Legislature, I believe we will accomplish a great good.

Sincerely,

JOHN J. A. O'REILLY, M. D.

"They say bread contains alcohol."

"Is that so? Let's drink a little toast."—Wash. & Lee Mink.

UNCANNY NUMBERS

In the "Dental Craftsman" for June, 1928, we find some interesting facts regarding the number 9. It was discovered by W. Green in the latter part of the 18th century that by multiplying 9 by any figure the sum of the resultant figures will inevitably add up as 9. Thus:

"Twice 9 is 18; add the digits together, and 1 and 8 is 9. Three times 9 is 27, and 2 and 7 added make 9. So it goes on up to 11 times 9, which gives 99; 9 and 9 added make 18, and 1 and 8 are 9. Go to any extent and you cannot get away from the figure 9. For example, 9 times 339 is 3051; add the digits together and they make 9. Again, 9 times 5071 is 45639; the sum of these digits is 27; and 2 and 7 is 9."—Patchwork.

PAYING HEALTH BILLS FOR AN INCREASING ARMY OF DRONES

Needless charity is the most expensive item of the taxpayers' budget. Alderman G. Edwards of Windsor, Ontario, declares the taxpayer is fed up on digging down to pay health bills of an increasing army of drones. We are going too far. The attitude of the older generation was to save, and lay up for the future, or else do without. It were well if such a policy could be inagurated today, especially when men drive up to our charity centers and beg for gasoline.

HOW MEDICAL ETHICS MAY BE TAUGHT

It is suggested that instruction in "medical ethics" may be carried on advantageously by (1) a short introductory series of lectures on general ethics by a qualified member of the philosophy department of the University; (2) lectures or readings on the historical development of "medical ethics," and (3) concluding with free discussions, in which the students take part, on practical case histories involving different aspects of etiquette and ethics in medical practice.—Chauncey D. Leake, *B. of the A. of A. Med. Col.*

AN 18TH CENTURY PRAYER

Give me a good digestion, Lord, and also something to digest,
Give me a healthy body, Lord, with sense enough to keep it at its best.
Give me a healthy mind, good Lord, to keep the good and pure in sight,
Which, seeing sin, is not appalled but finds a way to set it right.
Give me a mind that is not bound, that does not whimper, whine or sigh.
Don't let me worry overmuch about the fussy thing called I.
Give me a sense of humor, Lord; give me the grace to see a joke.
To get some happiness out of life and pass it on to other folk.

—The Churchman (New York).

Original Articles

RADIATION THERAPY IN MALIGNANT DISEASE WITH SPECIAL REFERENCE TO THE SATURATION METHOD*

GEORGE E. PFAHLER, M.D., D.M.R.E. (CAMB.)
Professor of Radiology in the Graduate School of Medicine of the University of Pennsylvania
PHILADELPHIA, PA.

The use of the Roentgen rays and radium singly or combined has become recognized throughout the world as a method of value in the treatment of malignant disease. This truth is demonstrated by the fact that no institution intended for the treatment of malignant disease is considered properly equipped unless there is a very elaborate x-ray equipment installed and especially designed for the treatment of malignant disease. When this equipment is properly installed, it involves a considerable outlay of money, and occupies a considerable portion of valuable space in the hospital. Furthermore, any institution intended for the treatment of cancer must have a considerable amount of radium, which involves even more outlay of money. If these agents had not been proven of definite value, the managing boards of hospitals would not be spending money in this manner.

Further, no institution for the treatment of cancer is efficiently managed, unless there is a trained staff of physicians and nurses, or at least one experienced radiologist, especially trained in the use of this equipment, for such equipment is of no more value and will produce no better results than will a complete set of surgical instruments and a fine operating room produce good surgical results without a trained surgeon.

The value of radiation in the treatment of malignant disease is recognized today by every intelligent and well informed surgeon. This value of radiation treatment of malignant disease has been established in spite of many obstacles; such as:

1. At the beginning, radiation treatment was reserved for the hopeless or recurrent cases, and in great part that is true today. Every one, who has studied cancer, knows that it is much more difficult to get a patient well of cancer in the late or recurrent stages than at the beginning, no matter what method of treatment is used. Yet in spite of this difficulty of dealing with late cases good results have been produced.

2. Twenty-five or thirty years ago, when radiotherapy had its beginning, no definite technique had been established; there were many blunders; there were many bad results and a few good results; there were few scientific principles to guide us; there was no carefully conducted experimental work to establish facts, and each physician had to work out his problems by himself.

3. There was often a definite antagonism on the part of the surgeons. This skepticism was in part justified by the results of bad judgment, bad management and lack of skill and experience which the surgeons recognized.

In spite of all these difficulties the value of radiation in malignant disease has been established, which proves an inherent value.

Through the strenuous efforts and sacrifices (in many cases martyrdom) on the part of the early workers who became hopeful because of improvements in advanced cancer, and enthusiastic because of a few cures, a valuable technique has been developed; specialists in radiology have developed; national organizations of radiologists have been formed, at least four of which hold annual meetings lasting from two to four strenuous days and nights with full programs; even the individual states and most large cities have local organizations which devote much time to the study and discussion of the many problems that are involved in radiology.

As a result of all these efforts, radiation therapy is recognized by the profession and has made definite progress. It now becomes a problem to find its definite place in general and in the individual case, and to determine the best technique to be used. *Today, when there is sufficient skill and equipment available, I believe, that radiation therapy is the method of choice* in the treatment of malignant disease of the skin, of the mouth, and of the cervix uteri.

CANCER OF THE SKIN

With the knowledge now available, *practically all cancers of the skin should be gotten well, if treated while they still involve only the skin.* When cancer of the skin has extended into the deeper tissues the greatest skill is required in its treatment; a combination of electro-coagulation and radiation is usually necessary, and fail-

*Presented by invitation before the Section on Radiology of the Illinois State Medical Society at its Annual Meeting, May 9, 1928.

ure is not uncommon. Most lesions of the skin should be recognized and treated properly before they have become cancerous. Therefore, I have been recommending the complete destruction by electro-coagulation of such precancerous conditions as keratoses, warts, moles, chronic fissures, and local degenerative changes as soon as they are brought to the attention of the physician. This should be thoroughly done, under local anesthesia and at one sitting. A mole should never have to be treated twice.

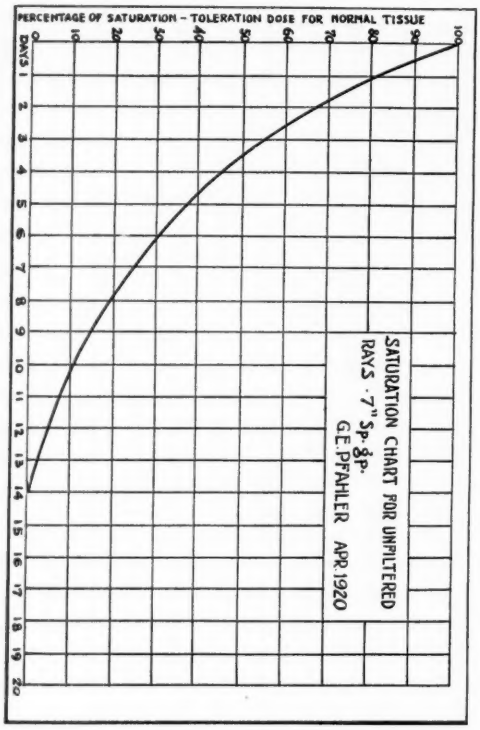

Fig. 1. Saturation curve for use with unfiltered rays, using from 7" to 9" parallel spark gap, for superficial skin effects. Determined upon the basis of a repetition of a full erythema dose in approximately fourteen days.

When cancer has actually formed, I still believe that the best, quickest and most economical method is the local destruction by electro-coagulation, associated with radiation. When, for cosmetic reasons, or when the disease involves the eye-lids, the most satisfactory results will be obtained by the application of radium, and next best by the Roentgen rays. Skin cancer like all other cancers are most sensitive to radiation at the beginning. Therefore, when the lesion is small and strictly localized, a single massive dose will give the best results, because one can in such instances safely use a destructive or overdose. When, however, the lesion is large and the surrounding tissues must be conserved the "Saturation Method" will give the best results even in skin cancer, but especially in deep seated cancer.

The Saturation Method of Radiotherapy. The "Saturation Method" in Roentgentherapy in connection with skin disease was first described in a preliminary paper by Kingery[1] in 1920, and further developed by me[2] to include deep Roentgentherapy and radium therapy as applied to deep seated malignant disease, and presented before the First International Congress on Radiology in 1925. In principle, the "Saturation Method" consists of the delivery into the diseased area of the maximum amount of radiation that can be tolerated by the normal surrounding tissue, and in maintaining this effect by additional smaller doses for a period of time sufficiently long to destroy the disease and not to permanently damage the surrounding healthy tissue.

We know from clinical experience, that malignant cells are most sensitive to radiation at the beginning and that this radio-sensitivity is gradually lost after a period of time, which is variable with the type of tumor. We also know from experimental evidence, that cells are most sensitive to radiation during the process of division.

Perthes[3] made the observations in 1903 that *the time of cellular division is the moment of greatest radio-sensitivity of the cell.* Regaud[4] and Nemenow[5] by carefully conducted experiments have confirmed this observation. Regaud has also made another deduction of great practical importance. "All other factors remaining the same, the duration of the treatment has an important bearing on the efficacy of a selective radiation."

For these reasons, it is the aim in the "Saturation Method" to maintain this maximum toleration effect for a sufficient time to destroy all of the dividing cells. The essential period necessary for this in each instance is not yet known. We have learned, however, that it is approximately from one to three weeks. This period will surely vary with the type of tumor. Some-

times further treatment seems advisable even after an interval of one to three months.

In all instances, one must keep in mind continually the total effect on the normal tissue and essential organs, as well as the effects on the tumor. One must therefore keep a most careful record of the amount of radiation that has reached the tumor area, as determined by the saturation curves which I have found workable. We have learned that normal tissues that are well supplied with blood will stand more radiation than those with a poor supply. Therefore, when radiating through fatty tissue, if large in area, one cannot exceed a total of 200% of an erythema dose without some risk, while a small tumor located in tissue which is well supplied by blood will stand twice or three times this amount.

The successful practical application of this method demands:

1. *An accurate diagnosis must be made,* not only as to the presence of malignant disease, but its extent, and the special type of tumor or its special characteristics, as determined by its history and the pathological history and nature of similar growths.

2. The relation of the tumor to surrounding essential organs which must be protected during the radiation.

3. The radiation must be carefully measured as to quantity or intensity, as to quality or penetrative value, and as to distribution. The beam of rays must be so directed that normal tissue will receive a minimum, and the tumor a maximum. The possibility of an excessive dose at the convergence of two beams at a deep point as emphasized by Holfelder must be considered and avoided.

4. The effect on the blood must be observed. This demands a complete blood count at the beginning and at intervals thereafter.

5. Daily treatments with moderate doses seem to be more effectual on the tumor, and less damaging to the general health of the patient.

6. The special saturation curve must be chosen according to the quality of radiation used.

7. I have not yet been able to determine the essential factors to produce a curve for pure gamma radiation, but a combination curve has been developed empirically for the combination of radium and high voltage x-rays in the treatment of carcinoma of the uterus.

8. In giving radiation treatment the greatest care is necessary to keep the patient's general health in good condition. All symptoms must be relieved so far as possible; all infections treated; diabetic tendencies guarded; and the general strength conserved so far as possible.

It will be seen, therefore, that this method is

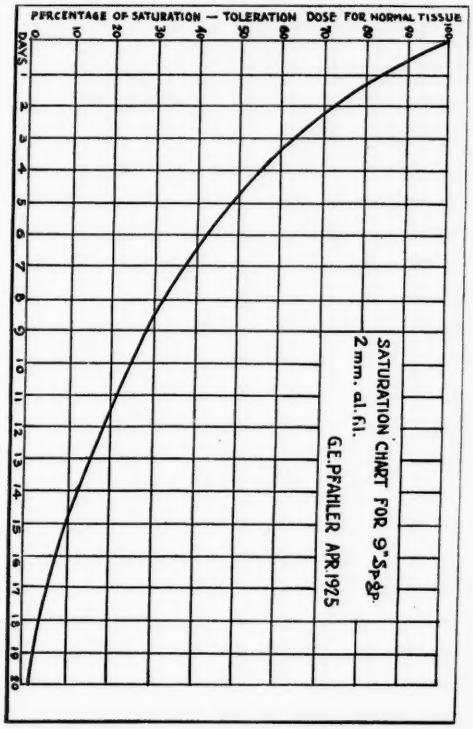
PERCENTAGE OF SATURATION — TOLERATION DOSE FOR NORMAL TISSUE
DAYS
SATURATION CHART FOR 9" SP. GP.
2 mm. al. fil.
G.E. PFAHLER ARR. 1925

Fig. 2. Saturation curve for moderately soft rays, using a potential equal to 9" parallel spark gap, 2 mm. of aluminum filter, based upon a time interval of three weeks.

not a multiplication table, but a mere outline which will give success in proportion to a physician's general knowledge of medicine, pathology, physics, radiation and care and skill in the application of this knowledge.

HOW THE SATURATION CURVES ARE DETERMINED

The saturation curves are based primarily upon clinical observation. Early in radiation therapy, when unfiltered rays only were used it was observed by many that an erythema dose could be given, and at the end of about two weeks

the visible effect had practically disappeared. At that interval of 14 days, such a dose could be repeated. It was assumed by Kingery that these biological effects as applied to the skin were recovered from more rapidly at the beginning so that the recovery value followed a logarithmic curve. He tried this out in skin disease and found that the theory worked out practically.

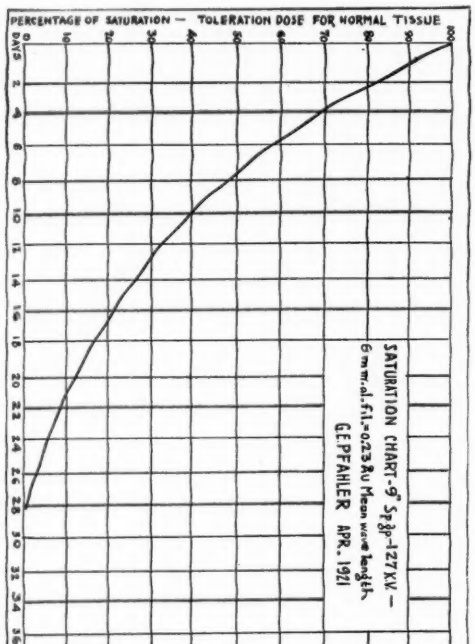
PERCENTAGE OF SATURATION — TOLERATION DOSE FOR NORMAL TISSUE
DAYS
SATURATION CHART-9" Spgp-127KV.—
6 mm. al. fil.-0.23 Å.U. Mean wave length.
G.E. PFAHLER APR. 1921

Fig. 3. Saturation curve for use with moderately hard rays, using a potential equal to 0" parallel spark gap, 6 mm. filter giving rays having a mean wave length of approximately 0.23 Å. U. Based upon a repetition interval of four weeks.

I reasoned then that if these biological effects work out in this manner in skin disease with unfiltered rays, it should work also with filtered rays in more deeply situated disease, by using an appropriate curve.

In 1905[6] I first recommended the use of a filter. At that time I recommended the use of a leather filter. This was soon replaced by the use of one or more millimeters of aluminum. We all observed that this increased the amount of radiation that could be given before an erythema dose is reached, but that the interval for repetition must also be increased. This interval must be prolonged in proportion to the amount of filter.

Therefore, applying the same principles, and assuming that 50% could be added in one-fourth of this interval and 75% in one-half of the interval, the subsequent curves for filtered rays were prepared. For 125 K. V. the interval for 2mm. aluminum filter was found to be 3 weeks, for 6 mm. aluminum 4 weeks, and for 200K.V. and 0.5 cu. filter, the interval was found to be 8 weeks. Weatherwax has shown these curves to be correct from a physicist's standpoint.

It should be the aim to deliver at least what we have learned to call an erythema dose into the tumor area through one or more fields in the shortest time possible consistent with the general health and local conditions. The rate of recovery is estimated from the curve, and supplementary doses are added to bring the dose to 100, from day to day, or at longer intervals, according to circumstances.

When deep seated disease is being treated the most penetrating rays available should be used. If the gamma rays of radium are available in sufficient quantity and if they can be controlled, so as not to harm other organs, they should be used. No matter what form of treatment is used in malignant disease, the earlier the patient is treated, and the less the extent of the disease, the better will be the results.

THE PRACTICAL APPLICATION OF THE SATURATION CURVES

In the practical application of these curves, all of the principles of radiotherapy must be kept in mind. In general, for the treatment of malignant disease, after determining its extent:

1. One should consider the portals of entry of the rays which will best give a homogenous distribution of the rays throughout all parts of the tumor, also the number that are necessary to deliver at least 100% into the tumor without giving more than 100% in the normal tissue.

2. One should consider the relative importance of the overlying organs and tissues so as to conserve them as much as possible.

3. The saturation value, and the total amount of radiation in the tumor area and in the overlying skin must be estimated and recorded.

4. Beginning with the first dose which may

be from 20% to 100% on one portal, according to circumstances, the amount of radiation reaching the tumor area must be estimated and on the second or subsequent day one reads from the curve the percentage of recovery, and adds additional treatment which may be repeated daily until 100% is reached on the curve in the tumor area, or on the skin at each portal of entry. This will usually require from several days to a week.

5. The 100% value is then maintained in the tumor area for from one to three weeks, limiting the effects on normal tissue so far as possible.

6. If the 100% must be reached by small doses, because of constitutional effects, then the saturation value cannot be retained long or the total values of radiation will be excessive. Therefore, no rule can be laid down, but clinical judgment must be used continually. At times one must choose between the risks of the disease and the risks of damage.

CARCINOMA OF THE BREAST

In carcinoma of the breast, radiation treatment should be considered in relation to surgery. *If cancer of the breast can be recognized while it is strictly local, there should be no delay in the immediate and complete removal.* The good results from surgery in such early cases have been established beyond doubt. It has been shown that from 70 to 100% recover, depending upon the degree of localization of the cancer. If, at operation, the disease is found to have extended beyond the breast, then post-operative x-ray treatment should be given as soon as practical, which is usually within two weeks. Unfortunately today, only about one case in five comes to the surgeon in the early stage, when the cancer is strictly localized in the breast. When the disease has extended even to the axilla the recoveries fall to about 20%, or about one in five.

Therefore, when the disease can be palpated deep in the axilla, the coracoid region, or the supra-clavicular region, preoperative radiation should be considered.

Preoperative Radiation in Carcinoma of the Breast is used in two ways, and should be chosen according to the conditions which are present:

1. If the surgeon believes that he can remove all macroscopical disease, then a course of preliminary treatment, especially directed to the likely lymphatic extension should be given. This will usually require a period of two weeks, and will delay the operation to this extent. This treatment in no way interferes with the operation or the healing of the wound, providing it is terminated two to three days preceding the operation. It is intended to devitalize the outlying cancer cells, as well as those within the breast and thus prevent their extension and implantation during the operation.

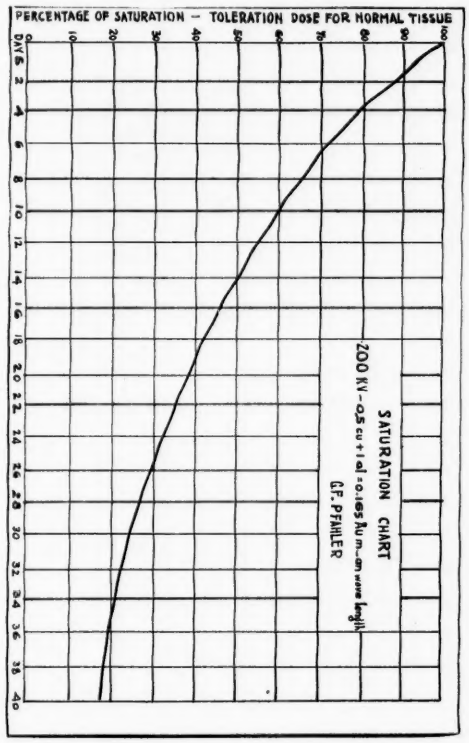
PERCENTAGE OF SATURATION — TOLERATION DOSE FOR NORMAL TISSUE
DAYS
SATURATION CHART
200 KV — 0.5 cu + al = 0.165 Å.U. — mean wave length
G.F. PFAHLER

Fig. 4. Saturation curve for use with hard rays having a mean wave length of approximately 0.165 Å. U. (200 K. V. — 0.5 cu. 2 a.) and based upon the interval between two full erythema doses of a period of eight weeks.

2. If the surgeon believes that he cannot remove all of the disease as in cases with infiltration in the coracoid region or supra-clavicular nodules, then the patient should be treated over the breast, axillary, coracoid, supra-clavicular region, and mediastinum during a period of about three or four weeks, and then after two or three months from beginning treatment remove the remaining disease. Frequently the outlying lymph nodes and disease will have disappeared, but only rarely will all evidence of dis-

ease in the breast disappear. In such cases, it is often practical to remove only the breast.

Our records show that in the cases in which there are glandular involvement in the axilla, as a result of post-operative treatment 46% are free from gross evidence of disease at the end of five years, as compared with an average of about 20% as reported by different authors in cases

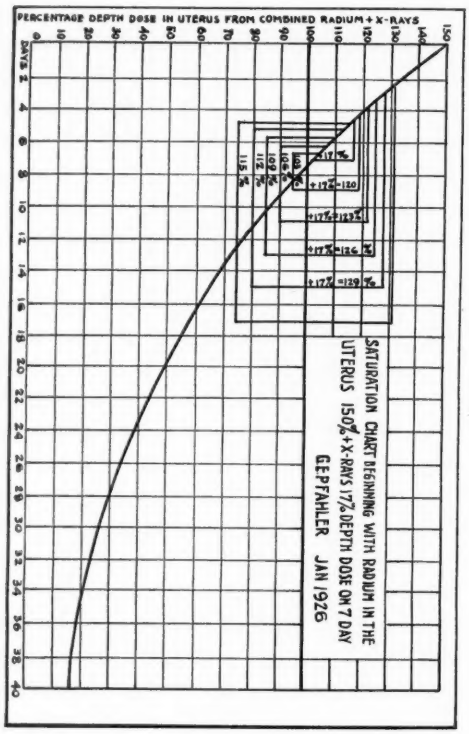
PERCENTAGE DEPTH DOSE IN UTERUS FROM COMBINED RADIUM + X-RAYS
SATURATION CHART BEGINNING WITH RADIUM IN THE UTERUS 150% + X-RAYS 17% DEPTH DOSE ON 7 DAY
GEPFAHLER JAN 1926

Fig. 5. Saturation curve for a combination of the intra uterine application of radium (gamma rays) and the use of high voltage x-rays externally. With gamma rays, one can safely give 150% of an erythema dose within the uterine canal, and the effects within the uterus can be continued by the external radiation. At the same time a greater effect is produced upon metastasis in the pelvis. The 17% is based upon a 34% depth dose at 19 cm. and a 50% surface dose on one of 3 portals of entry, on alternate days or half this quantity daily.

treated by surgery alone. This latter observation proves definitely the value of post-operative x-ray treatment. All of you have seen the disappearance of carcinoma which had recurred following amputation of the breast. Anyone can surely understand that it would have been easier to cure this disease if it had been treated while it was only microscopical instead of macroscopical.

We are most enthusiastic concerning the post-operative treatment of carcinoma of the breast. This is justified by the fact that when axillary glands are involved more than twice as many patients are well at the end of five years as compared with surgery alone in the same type of case, and as is shown by the following table.

Statistical Study of Radiation Therapy in Eight Hundred and One Cases of Carcinoma of the Breast, by G. E. Pfahler and B. P. Widman. The American Journal of Roentgenology and Radium Therapy; Vol. XIV, No. 6, December, 1925, Pages 550-562.

COMPARATIVE VALUES WITH OTHER CLINICS AND METHODS

(Operable Cases)

	No glands	Alive 3 years with glands	Alive 5 years no glands	Alive 5 years with glands
*Greenough	47%	19%		
*König	....	....	100%	39 %
*Bloodgood	....	....	70%	20 %
*Lee	....	....	....	15 %
*Finsterer	....	....	....	4.3%
*Doederlein	....	....	46%	5 %
†Doederlein	....	....	48%	20 %
‡Doederlein	....	....	80%	36 %
¶Wintz	....	....	77%	48 %
§Schmitz	....	....	64%	42 %
§Pfahler and Widman	....	....	68%	46 %

*Surgery.
†Surgery and radiation not completed.
‡Surgery and radiation totally completed.
¶Surgery and radiation both groups.
§Surgery and radiation.

CARCINOMA OF THE UTERUS

Seuffert[7] in reviewing the material in the Doederlein Klinck found that in the general cervical carcinoma if treated by radiation, while in the operable stage 48% were well at the end of 5 years as compared with surgery 46% studied in the same clinic, while if one only counts those which completed their radiation treatment, 80% were well at the end of 5 years. *This means that the individual woman who gets skillful radiation treatment, and carries out all instructions has an 80% chance of recovery, providing she is treated thoroughly from the beginning in an early stage.*

Recently Heyman[8] has made a rather extensive review of the 5-year results in the operable and borderline cases as recorded in literature. Only about 30% of all cases that apply for treatment are in the operable stage, leaving 70% for which there is nothing but radiation

treatment left, or possibly combined with the injection of one of the heavy metals.

Heyman—Act. Rad. Vol. XIV, No. 5, Nov. 25, 1927. Table 2.

Cancer Colli Uteri; 5 year results with radiological treatment in operable and borderline cases.

CANCER COLLI UTERI. 5-YEAR RESULTS WITH RADIOLOGICAL TREATMENT IN OPERABLE AND BORDERLINE CASES

No.	Author & Clinic	Year of	Published in Public	No. treated	Oper. & border line cases	%	No. rec.	Rec. %
1	Schulte (Baisch), Stuttgart.	1924	Arch. F. G., Vol. 121, page 446.....	198	101	51.0	24	23.8
2	Kehrer, Dresden	1922	Arch. F. G., Vol. 117, Kongr, p. 261.....	129	59	45.7	24	40.7
3	Regaud, Paris	1926	Rapport au Congr. a Rome, 1926, Brüssel.....	201	181	40.3	15	18.5
4	Scholten and Voltz (Döderlein) München	1925	Munch. M. W. 10. 1, p. 6.....	1,068	357	33.4	110	30.8
5	Eymer (Menge)	1926	Strahl., Vol. 24, p. 149.....	203	63	31.0	35	55.6
6	Radiumhemmet, Stockholm...	1927		500	144	28.8	64	44.4
7	Ward & Farrar, New York...	1926	Rpt. Women's Hosp., 1923-1924, p. 34.....	76	18	23.7	9	50.0
8	Healy, Memor.	1924	Canadian Practitioner, March	155	34	21.9	8	23.5
9	Wintz Erlangen	1925	Deutsch, M. W., No. 1, 1.19.....	415	89	21.4	29 of 55	52.7
10	Schmitz, Chi.	1925	Jour. Am. Med. Assn., Vol. 84, p. 81.....	103	18	17.5	9	50.0
11	Schweitzer	1921	Strahl, Vol. 12, p. 501.....	49	8	16.3	2	25.0
12	Clark & Block.....	1924	Am. J. Obst. and Gyn., Vol. VII, No. 5.....	144	22	15.3	6	27.3

CANCER OF THE MOUTH

I have become rather enthusiastic in the treatment of cancer about the mouth, since I have been depending almost entirely upon the surface application of highly filtered radium, applied both internally and externally during a period of about a month, on the principle of the "Saturation Method." No definite rule of technique can be laid down, because no two cases are alike, but we treat to the limit of normal tissue toleration, using gaama rays filtered through the equivalent of from 2 to 4 millimeters of lead.

I have not used this method long enough yet to give satisfactory statistics, but I get the impression that in the average case there should be a 50% chance of complete recovery and in the early case there should be a 75% chance. I have worked with cancer of the mouth for 30 years, but my results now are so much superior to all methods used by me previously that I feel like apologizing for my enthusiasm.

SUMMARY AND CONCLUSIONS

1. Radiation therapy has been recognized as a definite method in the treatment of malignant disease, and is superior for the treatment of cancer of the skin, the mouth, and the uterus.

2. The saturation method is, in my opinion, the superior method. It depends upon a prolonged effect of the radiation upon the malignant disease, to the limit of toleration of the surrounding normal tissue.

3. The method combines and makes necessary the greatest amount of knowledge concerning malignant disease, and the principles of the distribution of the radiation.

4. If all the knowledge that is now available is utilized we should cure practically all cancers of the skin (if treated while they are confined to the skin); 70 to 100% of cancers of the breast (if operated upon while still confined to the breast) and 46% if operation is combined with radiation, even after there are lymph nodes in the axilla, 50 to 75% of cancers of the mouth should be cured if treated early and thoroughly by gamma radiation; and 48 to 80% of cancers of the uterus should be cured if treated thoroughly and skillfully by radiation, in the earliest stages.

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DISCUSSION

Dr. E. G. C. Williams, Danville: I present whatever discussion I have of Dr. Pfahler's paper in order to present to him and to you my attempt at an application of the saturation method in my own work.

While listening to Dr. Pfahler I have seen some of my ideas shot thoroughly full of holes because I was not applying as he is applying. To review a wee bit, I did x-ray therapy during 1916, 1917, 1918, 1919 and 1920. In 1920 I became disgusted and quit. We were not measuring dosage. It was hit and miss, and was unsatisfactory to a person with a mathematical turn of mind.

In 1923 I saw some publications on the measurements of dosage. I became interested again and started again in x-ray therapy, using, up until the first of January, the E unit as described by Beets and Arens in 1923 or 1924.

With the description of the R unit, I prepared to switch to this the first of January of this year. I also became interested in the saturation method and said that beginning the first of January some things would be done. One was that in the starting of any deep radiation I was going to predict before starting what was to be done to that patient. You all know what we have been doing. We have given a fraction or a part of an erythema dose at a certain wave length. The patient comes back a few days later. He has had some reaction and we change our ideas a little and we change our treatment a little.

As we look back over our records, many of us find that we used this voltage and this filter three weeks ago; the next treatment we changed a little, and so forth. I felt that this could be predicted—what we should do—and we could stay with it.

In my radiation work I use six definite wave lengths, graduated from the .165 Å. of the half millimeter of copper, down to the long wave length of seventy-five kilovolts unfiltered. Dividing this into an increasing wave length, it gives us a type of radiation that will be absorbed in its greatest amount at different depths. From the long wave length that is absorbed mostly on the skin, to a subcutaneous and then where I will get my greatest absorption at five, at seven and a half and ten centimeters depth. I rarely ever attempt anything where I expect much absorption over ten centimeters. We have it to do at times.

These are numbered as waves one, two, three, four, five and six, with rounded portals of ten centimeters diameter, fifteen centimeters diameter, twenty centimeters diameter and a small one that will be used for any kind of a small portal for the dermal destruction work. So that when I say I use wave 2-B, I mean that I am using a wave length of .175 with a fifteen centimeter portal.

I have with my six wave lengths and my three sized portals, eighteen available modalities varying in intensity and absorption with voltage, etc.: varying in surface intensity considering back scattering, with the size of the portal.

These I am gradually plotting so that I hope by the first of next year to have all the figures on all of these wave lengths in a concrete form.

So that with 2 B I have a surface intensity of 18.5 R units per minute.

We prepared a card to start using the first of January, where I would apply this saturation dosage. The card is salmon colored to distinguish it from the others. We have a scratch sheet that carries both sides of the card. If Dr. Goodwin will give us the lantern slide, I will give you the method we have used of applying and predicting treatment before we start with the patient.

This is a patient with carcinoma of the uterus that was referred to me for x-ray treatment following radium treatment. I wished to predict treatment in this case. What am I going to do? There is no need for haphazard work, so in the measurement of my patient I find that from two anterior portals and a posterior portal I have approximately ten centimeters from the surface to the center of the mass, which we call our depth center, and all treatment is aimed at this depth center.

I want to put into this depth center such an amount of radiation as would be normally expected to give me a definite change amounting to degeneration or necrosis of this mass. With the wave length and with the modality which I choose to use, 2 B, or the wave length, .175 and 15 centimeter portal, we have found that it requires practically 700 R to give an erythema dose on the skin.

That is the last that I shall mention erythema dose. I do not like the word. I prefer to say skin tolerance dose. The further we get away from erythema and burns in our talk, the better off we are.

I am aiming my treatment at the center of the mass and not the skin. Therefore I will divide it into the necessary portals to put that amount of radiation at the depth center, and I want 700 R there as nearly as possible. I cannot do that through one portal because my depth value at 10 centimeters is only 29 per cent. of what it would be on the surface, so it would require an enormous amount on one portal. I divide into three portals.

This is my prediction of the treatment: Two anterior, one posterior. I am using my wave of 2 B on all of these. The depth value on all this at 10 centimeters' depth center is 29 per cent. Dividing up my 700 R, I am going to put 225 down through portal 1, 225 through portal 2 and 250 through B. In order to do this, I must place on the surface at 1, 770 R because it is only 29 per cent. of the surface value; 770 at 2, and 850 at 3.

I am ready to start with my patient. On the first day I start with the portals 1, 2 and 3, to give a dosage to see how my patient is going to get along. My intensity with modality 2 B is 18.5 R. I give ten minutes' treatment or 185 R on each of these three areas and ask my patient to return three days later.

On the fifth day of April, when the patient returns, my first treatment on the surface was worth what? According to Dr. Pfahler's curve, my three day value is 152 R, remaining active on that surface out of the

185 and my total valuation with the added dose on this day is 370 R on one and two and only 185 on three because my patient is getting considerable reaction.

With a total dosage at this time, valuation on the surface of 522 R, four days later my four day value is 390. I add 380, bringing my total on the surface to 770, my predicted. I have put 225 to the depth center through area 1 (at least I think I have) and a total amount of radiation on the surface of 935 R.

The same thing on three. I have not completed through my other portal in two other treatments. I bring my total surface radiation to 850 with a dosage at the center of 250, or I have my total depth value of 700 R, figuring the destruction of x-ray or retention at depth center even as I figured at the surface.

I know this is not the true saturation method, but it is a method that appeals to me of applying the saturation dosage to placing a definite amount of radiation at a given depth.

Dr. R. T. Pettit, Ottawa: Just a thing I would like to mention that I forgot. That is that Dr. Pfahler's ideas are in general use in clinics that I visited in Europe.

I thought you would be interested in knowing that.

Dr. E. S. Blaine, Chicago: I'd like to know what Dr. Pfahler's experience has been in practicing this saturation method of x-ray dosage which to me seems to be so logical and well thought out. Having in mind the desired biologic end result of the death of the pathological cell, this seems to me to offer great possibilities in therapy.

How far does he push the treatment continuously, particularly in deep seated lesions? Does he repeat this saturation of the tissues once, twice, three times if he is dealing with a very resistive lesion? We believe that some lesions are radio-resistive while others are radio-susceptible, the latter requiring less x-ray therapy than the former to affect a cure or a maximum benefit. Will daily applications of 10% of the initial dose for 3 or 4 weeks bring about the desired result?

Dr. H. Olin, Chicago: Mr. Chairman, I'd like to ask Dr. Pfahler, in the average case of deep therapy, deep-seated pelvic lesions, say, what he considers the average hundred per cent. dose—if he starts out using the hundred percent.? What does that mean in terms of kilovolts? And filtration? And time? Either expressed in R units or otherwise. How soon after does he use a ten or fifteen or other fractional dose? How long does he continue that?

Then, when he considers a rest period, how long would that rest period be?

Dr. R. T. Pettit, Ottawa: I have been so much interested in this work of Dr. Pfahler's. I have read the articles in the *Journal of the American Roentgen Society* and Dr. Weatherwax's article, which I think was published in *Radiology*.

About a little over three months ago I spent a day with Dr. Weatherwax at the Philadelphia General Hospital watching the cases being treated and going over the method with him. Frankly, it seems to me that the Regaud plan of treatment as Dr. Pfahler has mentioned, is just as applicable to the use of Roentgen rays as it is to the use of the gamma rays of radium; that we have to deal with a time factor and that this time factor is just as important in Roentgen rays as it is in the use of small dosage of radium over a long period of time in contrast to the plan of using an extremely heavy dose of radium over a very short time.

The experimental proof of Regaud's original contention that cells are more susceptible during mitosis is extremely difficult. Clinically, however, some of the work I observed recently at Brussels has convinced me that in the mouth and around the mouth truly remarkable results can be achieved by the use of small doses of radium applied in days rather than hours. This really is an application of the saturation method of radiation.

The difficulty of the application of the method as it applies to Dr. Williams and myself here (and Dr. Pfahler undoubtedly has the same difficulty to meet, because all his patients do not come from Philadelphia) is getting patients to return every few days for treatment over prolonged periods of treatment.

I question very much whether Dr. Williams or even Dr. Pfahler in his practice, can carry out this ideal application of a hundred per cent. saturation.

I would like to ask Dr. Pfahler a question. He believes that the upper limits of total radiation to be two hundred per cent. of an erythema dose or twice 700%, which would be 1,400 R in a given length of time, say twenty days, if 700 R represents what we call an erythema. That would be 1,400 R, in the period of time of say fourteen to twenty days.

I would like to ask what interval or rest period he would allow before he would give another course of treatment. Certainly it would be a number of months, but what are his ideas regarding the length of time?

I certainly believe that this plan of treatment represents a decided advance in radiation therapy and wish to congratulate Dr. Pfahler on his work and thank him for what he has given to us here today.

Dr. Williams' card looks extremely practical to me, much more practical, I believe, than Dr. Weatherwax's chart. It is certainly a lot less work to put down figures on a card than to draw lines on a chart.

Dr. Goodwin, Peoria: I would like to ask Dr. Pfahler if he still is using that same prescription in his erythema cases since deep therapy has been used. He used to have a certain prescription that was used externally.

Dr. Olin: At a depth of ten centimeters from the skin, what does Dr. Pfahler find is the greatest amount of depth dose he can get into the tumor mass without going beyond the two hundred per cent. value of the skin, especially in the fatty tissue?

Dr. Archibald: I'd like to ask Dr. Pfahler how I can get his curves.

Chairman Swanberg: I would like to ask Dr. Pfahler his criticisms or comments concerning the work of Drs. Clark and Morgan of Philadelphia, who have been advocating a modified saturated method of treatment consisting of daily applications of small doses of

ray over a considerable period of time (three or four weeks).

Dr. Pfahler: Answering the last question first, these curves were presented at the International Congress in London and were published in the *Journal of Radiology* published by the British Institute, but on account of the delay in getting that out, as I knew there would be, I got their special permission to have the article pre-printed and I distributed at least a thousand to the radiologists throughout the country immediately before it was even published, but it is published in this *British Journal of Radiology*. That is the first group.

I presented them and they are re-published in the *American Journal of Roentgenology and Radium Therapy*. They are in that envelope and will ultimately be published, I presume, in the *Illinois Medical Journal*.

It is a very simple matter to draw up your own curves. I have shown you how it is done so there is nothing to it excepting getting some paper and drawing it.

This question of how much radiation you can get in any particular ten centimeter depth—that depends on how many portals of entry you use and how much cross-firing you use, but the aim is to get at least as much as you get at any of the portals of entry so that if you are giving two hundred per cent. on the surface, you ought to be able to give two hundred in the depth. That is my general aim.

Now along the same line, I appreciate very much what Dr. Williams has presented. In his example case I personally would have carried that saturation along at least another hundred per cent. of what he has given it and he could have done that in every average abdominal case without harm. That would give you approximately two hundred per cent. on the surface and approximately two hundred per cent. in the depth. I think generally speaking you will need two hundred per cent. to cure carcinoma of the uterus. That depends upon the sensitivity of the type of tumor.

I said limit of two hundred per cent. That applies to areas where you are treating, as an example, through the uterus, through the abdomen, but I say again where you are treating smaller areas, for instance a tumor about the face, if you will protect the larynx and some of those especially sensitive organs, you can give considerably more, so that within a period of four or five weeks I have given as high as five hundred per cent. through one area.

That gives you, at least in the type of tumor that I had in mind, two or three hundred per cent. in your tumor area. So you have to adapt yourself. I can't lay down any rule. You have to take into account the values and risks you are taking all the time.

Dr. Swanberg asked me the question about what I think of the Morgan and Clark technique, or the Clark and Morgan technique. So far as I know, they have described three cases in which they got results and those three cases I think were first described three years ago. I haven't seen any other cures claimed, have you, Doctor?

Dr. Swanberg: No.

Dr. Pfahler: As a matter of fact, all those patients had a great deal of radiation preceding, and you had there an accumulative value. You have this advantage. They treat the patients twice a day. I have mentioned the reasons for having treatment twice a day. If it isn't too much trouble to you and the patient, and where you have the patient in the hospital and it is all convenient, I think you will get better results by treating twice a day and I think that it is the good part in their technique—not the small dosage.

As Holfelder has stated in one of his papers and to which I referred in my original paper in 1925, he demands to know of any single case that has been cured by indirect radiation—from effects upon other tissues That is, by a non-destructive dose on the tumor area. And I don't know of a single one.

You can get striking results in the very sensitive types of tumor by relatively small amounts of radiation but that is due to the increased sensitivity of the tumor tissue and not due to your small radiation and of course we all know of the brilliant results that we get in the lympho-sarcomas and the Hodgkin's disease, but we also know how generally we fail ultimately in that very type of case and we fail ultimately because while the tumor is sensitive, we probably fool ourselves and limit our radiation too much to a small area.

I have some Hodgkin's cases that are well now sixteen years, but it is only in those cases in which I covered the entire lymphatic system, so far as I knew it. I think that is the thing you have to do if you are treating that type of disease, because while it is a sensitive type of tumor, it is a rapidly growing tumor and quickly spreads much further than you and I think. We are not quite on our job in those cases. We fool ourselves and the patient gets fooled worse than we do by the rapid temporary results.

The interval after giving two hundred per cent. or whatever we decide to give, our aim should be and the ideal should be, I believe, to give all your treatment within a period of let us say three weeks. My judgment may be wrong and yours may be wrong and we may find that after two or three months we still have some evidence of disease. Then we've got to come back to it or fail. You are taking a certain amount of risk but you take it because there is nothing else to do.

I say I don't know how long these resistance cells in the tumor are going to live, and as long as they live there is a time coming when they can reproduce themselves. We don't know that yet, but I think in all instances we ought to keep our radiation down as much as we can, as much as we dare. As we go along for years, we are going to learn some things about that point and then we can talk more intelligently and we will learn to classify our tumors and take certain types, under certain conditions, that probably will be cured in a week of saturation value, or two or three or four weeks.

In these mouth cases I am talking about, we aim to keep our saturation value up for three to four weeks.

What is the erythema dose? That is a matter of clinical judgment, if we are going to use the term "erythema dose," and up to the present time we haven't

got our R units quite standardized, though we are getting closer to it. For instance, the Germans, generally speaking, are using about 660 or in the neighborhood of 600 R, but their 600 R will probably equal about 800 R of our units or thereabouts. The French are using in the neighborhood of 1,200 to 1,500 R, but their 1,500 R are about equal to the same thing because it takes, as I remember the figures, 2.25 French R to equal one German R, so you can easily see, if you will multiply 600 by 2.25, you are getting up to about the same thing again.

We are still talking in erythema dosage. One man will speak of an erythema dose with a faint redness and another man speaks of an erythema dose when the skin peels off. As long as we have those variable terms, we have to accept a variable answer.

Have I answered all the questions?

I thank you very much for your attention.

A DEFENSE OF ANIMAL EXPERIMENTATION*

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How to live completely and beautifully is the fundamental problem that confronts every human being. To get the most that is worth while out of life, to make those about us happier and to deserve the right to eternal existence is the perfect ideal toward which we all should strive.

The aim of the scientist is to contribute to this problem and to this ideal by investigating and increasing our knowledge of all natural phenomena. The physicist investigates the seen and unseen physical phenomena, as a result of which he provides us with the engine, harnessed electricity, the x-ray machine, the radio, etc. The chemist investigates the changes in the composition and constitution of material things, as a result of which we are provided with gases, soap, dyes, pure chemicals, steel, rubber and many things used in modern life and industry. The biologist investigates the structure and functions of living things and provides us with the means for increasing the production of food, for preventing disease, and for knowing its cause and cure.

No one would deny the statement that the results of scientific investigation have made it possible for us to live more completely and beautifully. Our progress in science has been due to the use of the scientific or experimental method. Experiments are devised to analyze obvious phenomena, to test theories and hypotheses relative to the nature of phenomena, to discover the existence of phenomena which cannot be detected by the senses, and to ascertain how these phenomena may be correlated.

The physicist and chemist in their experiments obviously use inanimate matter. The biologist must use as his experimental material either living things or things that have once lived. In order to study structure, the dead bodies of plants and animals are used; but to study function, the living bodies of plants and animals must be used.

A study of function is essential, because the disturbance of function causes the symptoms of disease. In the automobile the function of the spark plug is to provide a spark to explode the gas. If the points of the plug are coated with carbon which prevents the formation of a spark, the engine manifests symptoms—it coughs. If the function of the spark plug and the effect of carbon on its function were not known, the automobile mechanic would not know how to remedy it. The automotive mechanic has devised and knows the function of the spark plug and the effects of substances on it because he has used the method of experimentation.

The biologist, because he is forced to use living material for many of his experiments and because his results apply to the phenomena of life, frequently finds it necessary to defend himself and his science from the attacks of emotional, over-sentimental, uninformed, but conscientious groups in Society.

These attacks too frequently amount to a repudiation of the authority of science, of the moral, ethical and spiritual integrity of scientists as a group and of the validity of the scientific method. Inaccurate thinking is too frequently a proclivity of the large majority of mankind. No one can keep up with all the discoveries of science and few are familiar with the methods and motives of science. Most of us still think with our imaginations. We let the stock market, "high pressure" salesmen, false advertising, and the unscrupulous politicians despoil us of our material wealth; we let the quack and charlatan persuade us with figures of speech. In medicine it is easier to sell the public the impossible, the cure-all, than it is the

*An address before the Optimist Club of Peoria, Illinois, Jan. 29, 1929.

possible and scientifically proven remedy. We too frequently take the line of least resistance and do not take the trouble to investigate the facts. The good business man investigates the facts pertaining to his business, but too frequently uses his imagination and emotion in dealing with important but extraneous matters.

The most unjustified and probably the most detrimental attack made on biologists is the attack made on the use of higher animals for experimental purposes. As long as the biologist uses plants, worms and insects as experimental material he is free from this attack, but there are some so psychopathically sentimental that they would prevent the experimental study of a cockroach. The chief attack, however, is on the biologist that uses the higher animals,—the guinea pig, cat, rabbit, dog, hog and horse for experimental purposes. Such an attack would be justified if the experimental use of these animals were inhumane, unethical and immoral. Frequently bills are introduced into state legislatures, designed to prohibit the use of animals for scientific experiments, and literature of a slanderous and abnormal imaginary character is distributed to excite the public against animal experimentation. Men and women of international renown, university presidents, professors of science, physicians, and representatives of government laboratories and industries, whose progress would be vitally affected if such bills pass, must organize and present simple facts to the legislators in order to overcome misguided and ill-informed sentiment and to protect the public from one of the greatest possible catastrophes.

The preeminent political, moral and scientific leaders of the world, the leading business men, the farmer, the teachers, the preachers and missionaries have been and are convinced of the necesssity and efficiency of animal experimentation, as performed in medical research laboratories, in the study of function, and the discovery of the prevention, cause and cure of disease. But in Illinois there persists, as well as in other communities, a small group of serious-minded, unreasoning persons who fanatically atttack not only the method, but the motives and the integrity of the group of scientists working in a field of such great value to the welfare of mankind.

Everyone should know the truth, because animal experimentation is vital to the health of the world.

There are two ways to ascertain the truth, to determine whether animal experimentation is justified. One is to visit the laboratories (they are open to visitors), to observe the methods used and the animals operated on, and then make an analytical study of the results obtained through such experiments. The other is to read or hear of the statements and observations of others who have a true reason to be informed and whose opinions you respect. There are men and women of wide experience who know the truth, who have big hearts, but use their brains as well, who have balanced minds, because balance is necessary for all medical and surgical matters. Ask your doctor, speak to some well known humanitarian, or your minister about this question.

The most common arguments advanced against the method of animal experimentation are two; namely, the method is brutal and nothing of good comes from it. Let us consider these arguments.

Is the method brutal or inhumane? The antivivisectionists allege that experiments are performed without an anesthetic. Their descriptions of what is supposed to occur behind laboratory doors is terrible and preposterous. No one with normal judgment can believe their statements, because if they were true, individuals performing such experiments would not be retained in their positions. More than that, they would be subject to arrest and imprisonment according to the humane laws of the State. Animals are anesthetized before they are operated on, and the vast majority are painlessly killed with ether. If the animal is to recover from the operation, it is performed just as an operation is performed on a human being. The Honorable Charles W. Eliot, President Emeritus of Harvard University, in an address on "The Fruits of Medical Research with the Aid of Anesthesia and Ascepticism," said that the discovery of anesthesia was not only to revolutionize surgery and obstetrics, but also to yield unimagined beneficial results, because it would steadily enlarge the range of medical research, and particularly would open to humane and far-seeing investigators the great field of animal experimentation. The presence of pain in many experiments must be avoided in order not to

vititiate the results. It is true that occasionally the animals suffer some serious discomfort, in the course of some experiments. Not more than three per cent. of the animals used suffer any serious discomfort. A group of rules by the American Association for Medical Progress has been adopted and is posted and enforced in all American laboratories of research.

RULES REGARDING ANIMALS

1. Vagrant dogs and cats brought to this laboratory and purchased here shall be held at least as long as at the city pound, and shall be returned to their owners if claimed and identified.

2.—Animals in the laboratory shall receive every consideration for their bodily comfort; they shall be kindly treated, properly fed, and their surroundings kept in the best possible sanitary condition.

3. No operations on animals shall be made except with the sanction of the director of the laboratory, who holds himself responsible for the importance of the problems studied and for the propriety of the procedures use in the solution of these problems.

4. In any operation likely to cause greater discomfort than that attending anesthetization, the animal shall first be rendered incapable of perceiving pain and shall be maintained in that condition until the operation is ended.

Exceptions to this rule will be made by the director alone, and then only when anesthesia would defeat the object of the experiment. In such cases an anesthetic shall be used so for as possible and may be discontinued only so long as is absolutely essential for the necessary observations.

5. At the conclusion of the experiment the animal shall be killed painlessly. Exceptions to this rule will be made only when continuance of the animal's life is necessary to determine the result of the experiment. In that case, the same aseptic precautions shall be observed during the operation, and so far as possible the same care shall be taken to minimize discomforts during the convalescence as in a hospital for human beings.

In this connection the question of man's right to use animals has frequently been raised. In everyday life, the working idea on this question is that mankind has dominion "over every living thing that moveth upon the earth." Animals work for us. Millions of animals are killed daily for food and clothing. Calves are taken from cows, animals are castrated and dehorned without an anesthetic. More pain and suffering is inflicted on animals by hunters and trappers in one day than has been inflicted on animals through experimentation in its entire history. The antivivisectionist as a rule wears woolen clothes, shoes, possesses furs and feathers which have been obtained through the suffering of animals. The most ardent lover of animals would hesitate to state the number of animals he would sacrifice to save the life of a human baby. President Eliot has said, "The humanity which would prevent human suffering is a deeper and truer humanity than the humanity which would save pain or death to animals." President Angell of Yale, after investigating the ethics of animal experimentation concludes that "we find no obstacle to the practice of animal experimentation in any intuitive moral convictions, nor in the traditional morality of our race." John Dewey, the noted philosopher, on reviewing the ethics of animal experimentation states: 1. "Scientific men are under definite obligation to experiment upon animals so far as that is the alternative to random and possibly harmful experimentation on human beings, and so far as such experimentation is a means of saving human life and of increasing human vigor and efficiency. 2. The community at large is under definite obligations to see to it that physicians and scientific men are not needlessly hampered in carrying on the inquiries necessary for an adequate performance of their important social office of sustaining human life and vigor." His Eminence, Cardinal O'Connell, states "that the opponents of vivisection have their chief argument on neither reason nor morality, but rather make a very unworthy appeal to morbid sentimentalism relying for its propaganda upon what certainly appears to be deliberate misrepresentation." Rev. John Haynes Holmes in a sermon preached in Community Church, New York, stated, "To accept the charges of cruelty against scientists of this type, which are usually preferred by ignorant employees of the janitor or scrub-woman type, who knows no more about what is going on than I know about what is going on in the laboratory of an Einstein or Steinmetz, this is a thing impossible to me."

The foregoing, I believe, shows that animal experimentation is not only not brutal or inhumane but that it is ethical, moral, and the duty of society to foster and encourage (which, of course, is being done at the present time by putting millions of dollars into endowments for medical research).

The argument that nothing good or worth while has come from animal experimentation is

not a true argument, but is a statement made by one who is religiously or morbidly prejudiced, or by an uninformed person. Ask the life insurance companies what animal experimentation has done to the morbidity, mortality and longevity statistics. Why are such diseases as typhoid fever, diphtheria, smallpox, malaria, child-bed fever, yellow fever, cholera and others, so rare? Ernest Thompson Seton wrote this letter to the President of the Vivisection Investigation League: "I learn now . . . . that you utterly condemn the work of the Pasteur Institute, the Rockefeller Institute and allied laboratories. I have to thank the studies of such institutions for the fact that my wife is alive today . . . . Kindly accept my resignation from the Vivisection Investigation League, to take effect immediately."

I will mention briefly two discoveries made by animal experimentation.

The physiologist has studied the function of the pancreas in the dog. He found that the removal of this organ resulted in a disease similar to one that occurs in man, which is known as diabetes. He found that if extracts of the pancreas were made and injected, the life of the diabetic dog was saved. This knowledge was applied to man. This discovery made possible the control by physicians of the most dangerous features of this disease, and will prolong the life and alleviate the suffering of 1,000,000 people living in the United States today, who already have diabetes or will develop it.

In the neck there is a gland which controls the metabolism, growth and development of the body. If this gland does not function in the infant or child, the physical and mental growth are stunted. They are mentally dull and unintelligent and in some cases are positively brutish. They develop into dwarfs. In adults, if this gland does not function, the features of the most beautiful woman and most handsome man may become heavy and unintelligent. They become mentally dull and uninteresting. Their lives are practically ruined. The physiologist has found that this condition can be reproduced by removing the gland in animals. He has found that these animals can be cured and the disease prevented by feeding extracts of the thyroid gland. More than that, he has isolated this substance in crystalline form, and has been able to make it in the chemical laboratory. What has been the result? These two diseases have been abolished from all parts of the earth in which well informed physicians reside. Imagine the untold happiness that would come to you as the mother or father of such a diseased child, when the physician treats him with this substance to observe your unfortunate child blossom out within a short time into a healthy normal human being! I might cite some twenty-five other examples such as blood transfusion, the sewing of blood vessels, the control of specific cerebro-spinal meningitis, the cure of parathyroid tetany, the discovery of ethylene anesthesia, the discovery of adrenaline, pituitrin, the control and in many instances the cure of many of the infectious diseases, such as yellow fever, malaria, rabies, diphtheria, scarlet fever, cholera, typhoid fever, tuberculosis, etc.

Much more is yet to be accomplished. Although animal experimentation has yielded many causes and cures for the acute diseases that were scourges to mankind, we are just beginning to investigate the chronic and degenerative diseases such as hardening of the arteries, kidney disease, heart disease, cancer, etc. The Antivivsectionists criticize animal experimentation because they have not found out the cause and cure of cancer and other diseases. It must be kept in mind that animal experimentation is not an old method. Practically all of the discoveries have been made in the last fifty years and most of them since 1900. We know some of the factors concerned in the cause of cancer such as chronic irritation and hereditary tendency, but time, patience, money and workers are necessary to solve any great and complex problem in nature. The cause, cure and prevention of all diseases cannot be accomplished in a few years or decades. Such a criticism obviously is unjust. Cities and nations are not built in a day. Neither does man become civilized over night.

The lives of the animals themselves have been markedly benefited in the following specific instances: 1. anthrax control, 2. hog cholera control, 3. tuberculosis control, 4. gland control, 5. Texas fever control, 6. blackleg, 7. rinderpest, 8. Malta fever, 9. tetanus, 10. foot and mouth disease, 11. distemper, 12. hydrophobia, and some ten other rare diseases.

The discovery of a vaccine for anthrax in sheep by Pasteur resulted in preventing the

suffering and death of sheep to the extent that, expressed in the terms of money, it amounted in a few years in France to more than five billions of francs, enough to pay off the Prussian War indemnity. Twenty sheep were used in the experiment. The discovery of a serum for hog cholera in which seventeen hogs were sacrificed in the year 1921, led to a saving of $47,000,000 to the farmers of our country. This amounts to about one million hogs saved. Other specific cases might be cited.

To deny that animal experimentation has accomplished anything, is to deny most of the findings of modern medical science and the efficacy of most of its treatments.

The attack of the antivivisectionist is an hysterical crusade against medical science, and not against the alleged torture of the laboratories. This is shown by the fact that the antivivisectionists try to stop the almost painless work in the laboratories and do nothing about the pain caused animals daily in the process of producing food, furs, etc.

Recently a patient suffering from an incurable malady, for which physiological research has immediate prospects of finding a cure, was informed of the actions of the antivivisectionists, and he replied, "Anyone who aims to prohibit medical research on the pretext of sparing a few stray dogs, should be considered willing to pass sentence of death upon the many sufferers of maladies for which a remedy is not yet known."

The following is the type of letter those of us doing animal experimentation receive from time to time; the following letter was received by me a year ago: "I hope you will suffer the agonies of the damned, just in proportion to what you are making those little animals suffer. I pray that whoever rules the universe will punish you terribly." It is my sincere hope that I will suffer no more distress in the life to come than I have caused my animals to suffer, and the little I will suffer will make me extraordinarily happy when I will think of the inestimable value for the welfare of mankind that will have been derived from such a small sacrifice. Dr. Keen, the Dean of American Surgeons, received the following letter: "Arch-Fiend: I read with horror your article in the *Ladies' Home Journal* on Vivisection. I hope your mother, if she is living, will die in the most terrible torture, and if she is dead that her soul will never know rest for having given life to such a vile monster as you, is the nightly prayer of a dozen women who indited this." Is antivivisection an hysterical crusade? You can answer.

It is particularly fitting that I speak before this Club on the subject of animal experimentation and that you have a physician for a President, because antivivisection is pessimism and of all optimistic groups the physicians and medical investigators are preeminent. The physician, although he may tell you that you will die tomorrow, will try his utmost to patch up an old, mistreated, disreputable looking body that may be economically fit only for the scrap heap. Humanity, mercy and hope are the attributes of medical science. The ultimate aim of science is to banish disease and physical and mental suffering from the earth. The hope and optimism of the medical research worker can vision the dawn of a new era on the earth when suffering shall be no more.

CHEMICAL OBLITERATION OF VARICOSE VEINS*

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The modern injection treatment of varicose veins dates from Sicard's observation in 1916 that certain solutions on being injected into the veins of the cubital fossa brought about their painless obliteration. Upon investigating the cause of this obliteration he found that it was due to the alkalinity of the solutions. He then decided to apply this property of alkaline solutions to the treatment of varices and was led by his researches to recommend injections of sodium carbonate in concentrated solution. This salt, while an excellent sclerosing agent, was objectionable because of its causticity, the slightest drop outside the vein producing rapid necrosis. It was, therefore, promptly discarded, and in its place sodium salicylate in 20 to 40% strength was adopted and has since been used with much success. Within recent years several other solutions have been advocated, notably hypertonic

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salt solution (20%) (championed by Linser), glucose in 50% strength (advocated by Nobl), calorose, an invert sugar preparation being used at present in Austria, and neutral quinine hydrochloride (13%) with urethane as an analgesic. In this country, the most widely used solutions are sodium salicylate, hypertonic saline, and the various sugar solutions, and it is these that we have been using.

The technic involved is quite simple. It consists merely of an intravenous injection which presents only the difficulty of being performed frequently on tortuous, shifting, and sometimes very thin-walled veins. One must be absolutely certain that the needle is within the lumen of the vein. The patient may be either in the sitting or recumbent posture. It is not necessary to use a tourniquet. The injection should always be carried out slowly, watching carefully for signs of extravasation of the fluid. Should this occur, one injects immediately 5 to 10 c. c. of physiologic sodium chloride solution subcutaneously to dilute the irritant fluid in the tissues. The treatment varies slightly, depending on the sclerosing agent used. If glucose is to be used, one injects 5 to 10 c. c. of a 50% solution two to three times weekly. Glucose, however, is not a very rapid sclerosing agent, but because it is relatively non-toxic and produces such little reaction in the event of the solution getting outside the vein, it is used by many men. Sodium chloride, if selected, is used in 20% strength, 5 to 10 c. c. being injected twice weekly. While it is a good sclerosing solution, it so often produces a severe cramp-like pain below the site of injection lasting for several minutes, that patients frequently refuse to continue the treatment. Our own preference has been for sodium salicylate, in 20% strength, injecting 5 c. c. at the first sitting, and 10-15 c. c. at subsequent sittings. One injection often suffices to obliterate 5 to 10 cm. of the vein. Some patients state that they experience a momentary burning sensation; most patients, however, are entirely free of any subjective sensations. On one occasion, slight dizziness was complained of shortly after an injection of 15 c.c. (3 grams of sodium salicylate), which lasted for about twenty minutes. It did not recur with subsequent injections. If the 20% sodium salicylate does not produce the proper reaction—this occurs rather infrequently, the same solution in 30% strength may be used. Upon concluding the injection, it is best to bandage the limb with a cotton elastic bandage, which may be left on for 48 hours. This pressure causes a collapse of the vein at the site of injection and often the walls become adherent so that the vein does not refill. The number of injections must be decided entirely by the case involved—usually one or two suffice for the smaller veins, three to six for the larger ones.

What are the anatomic alterations produced by these solutions? Their effects become manifest in about 48 hours. These sclerosing fluids produce an irritation of the endothelium followed by the formation of a very adherent clot. This is then followed by gradual sclerosis and finally atrophy of the entire vessel. All coats of the vein take part in the reaction. Jentzer and Askanazy mixed collargol with solution of sodium salicylate and injected it into a vein. Several hours after the injection the collargol had penetrated into all the coats of the vein.

The French School has been pleased to call the process just described "venitis," which seems to differ somewhat from the infectious irritation of the vein called "phlebitis." The former is localized, is associated with the formation of a very adherent clot, gives rise neither to pain or edema of the limb, and leaves an atrophied cord. In the latter, there is often extension from the superficial network to the deep venous system causing edema of the limb, the clot is often loose, pain is nearly always present and atrophy does not occur. Phlebitis may give rise to embolism, venitis practically never does.

To ascertain the distribution of the injected fluid in the venous system of the extremity, Jentzer of Geneva injected 20% strontium bromide solution and by radiographic studies showed that in varicose veins the injected liquid follows a course opposite to the usual direction of the blood flow. This, in his opinion explains the rarity of embolism. Sicard, Gaugier and Forestier injected iodized oil into varicose veins under the fluoroscope (a dangerous procedure, not to be commended), and found that the blood flow, if not reversed, was at least much slower, and that the liquid injected into the superficial venous system showed little tendency to reach the deep network if the injection was made on a recumbent patient. If, however, the limb was moved vigorously, the opaque liquid was seen to flow into the deep veins. The practical inference

from this is that the irritant solution should be injected while the limb is at rest and the patient should remain quiet and relaxed for a short time after the injection in order to limit the solution to the surface veins.

There are certain contraindications to injection that must be carefully observed: Old enfeebled individuals should not be treated, nor should those with diabetes, advanced cardiorenal disease, extensive edema of the extremities, or recent thrombo-phlebitis be injected. It is also safer to exclude pregnant women.

What are the untoward results? The cramp occurring at the time of injection, and the possibility of necrosis occurring if the irritant fluid gets into the perivascular tissues have already been mentioned. Sometimes a perivenitis occurs, with pain and slight swelling, which yields readily to hot fomentations. Syncope at the time of injection has also been recorded, and is said to occur in emotional and neurotic persons.

McPheeter and Rice were able to collect only 7 deaths in approximately 53,000 cases, a mortality of 0.0024 per cent. Four of these 7 can be attributed to pulmonary embolism. Of the remaining 3 cases, two died of septicemia, and the third of mercurial poisoning (following the injection of mercuric chloride.) Regard concludes his report with the statement that "the danger of embolism is to be feared no more than in ordinary surgery or in the accidents of daily life.

CONCLUSIONS

Chemical obliteration of varicose veins is recommended because of its simplicity and harmlessness. The results are uniformly satisfactory. The treatment is ambulatory permitting patients to continue their usual daily routine.

180 N. Michigan Avenue.

ACHLORHYDRIA, TYPES, CAUSES AND TREATMENT*

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Studies of the secretion of the gastric juice by physiologists and clinicians have given us all something to think about in interpreting stomach symptoms in our patients. Gastric distress is perhaps more often referable to extra- than intra-gastric conditions and lesions. Nevertheless as Cornell[1] states "the stomach is a barometer indicating the general condition of well being or cachexia." It is with some phases of the relationship of this state of well being or cachexia to a type of stomach secretion that this paper deals.

Carlson[2] in his review of gastric secretion in health and disease summarizes most adequately the researches of himself and his associates and others. Much of my interest in some clinical studies in gastric secretion on patients in the Norbury Sanatorium and elsewhere dates from reading this article. Dr. L. C. Taylor's discussion of my paper "Early Neurologic Findings in Primary Anemia"[3] at the Springfield meeting of this Society seven years ago, also was stimulating.

Achlorhydria is defined as a condition in which by the use of the fractional test meal, no free HCl is detected in the stomach contents during the digestive or interdigestive period although combined acid and some degree of peptic activity are found. Achylia gastrica as a term has perhaps been used more often for this condition up to recent years. The use of modern methods shows that true achylia gastrica, that is no hydrochloric acid, no pepsin, is quite rare. Prior to the use of the fractional method of analysis and also the use of the smaller Rehfuss, Ryle or Einhorn tubes one session with the larger stomach tube was about all the physician could get his patient to stand. Now, however, thanks to the tube of small caliber and with the small olive tip even highly nervous individuals can wear the tube for some time. If doubt arises as to whether the tube is in the antrum of the stomach, if samples of secretion from different parts of the stomach are desired it is usually not difficult to fluoroscope the patient or to move the tube around under fluoroscopic control.

The studies described in this paper have all been carried out with the Rehfuss tube and the Ewald meal. The limitations of the method of analysis and the interpretations of curves as pointed out by Crohn and Reiss[4], Gorham[5], and others and more recently by Bloomfield and Keefer[6] are recognized and wherever possible taken into consideration. The factors of dilu-

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tion of secretion by the meal itself, by swallowed saliva, and by regurgitation of duodenal contents; of buffer action of materials in the meal, of rate of emptying time, of variation in secretion in different portions of the stomach certainly preclude any attempt at strict interpretation of a so-called type curve by this method. It would seem, however, that these factors would apply less to cases presenting achlorhydria than tc those in which a possible hypersecretion or hyperacidity is being sought.

The procedure more recently described by Bloomfield and Keefer of introducing 50 cc. of 7 per cent alcohol, withdrawing it, returning all save 10 cc. and repeating this at ten minute intervals until the stomach is empty is free from some of the objections mentioned above. This method is now being used on some of the cases previously studied by the Ewald meal though no adequate comparative data are yet available.

Clinically one usually thinks of achlorhydria as associated with pernicious anemia or gastric carcinoma. There are many other situations in which no free hydrochloric acid is present. Bennet and Ryle[7] for instance noted this condition in 4 per cent of 100 normal medical students. Wright,[8] examining 250 children from 6 to 15 years of age, found it in 1.6 per cent. Hurst[9] reported 10.5 per cent in 325 apparently normal persons. As one grows older the gastric glands like other glands show lessened activity. Achlorhydria is reported, therefore, as much more frequent in people over fifty, the figures varying from 30 to 60 per cent. Gastric analyses in older persons must be interpreted in the light of these findings.

An acquired absence of free HCl in contradistinction to these apparently spontaneous findings also exists. Several groupings of the acquired type are given such as 1. alcoholic; 2. following gastrectomy; 4. gastric carcinoma (presthe stomach must always be considered; 3. followning gastrectomy; 4. gastric carcinoma (present in about 50 per cent); 5. cachexia from carcinoma elsewhere, pellagra, beri beri, many toxic states.

Carlson, in discussing gastric hypoacidity and achylia with extra gastric diseases, mentions and quotes in addition to those above the following: anemia, edema, gall bladder disease, chronic colitis, marked hypothyroidism, some primary cardiac cases, toxemias of pregnancy, fevers. Hurst compiled the following table:

TABLE I

ACHLORHYDRIA

	Cases	Number	Per cent
Normal (Bennet and Ryle)	100	4	4
Carcinoma of stomach	25	15	60
Chronic appendicitis	65	22	33
Gall stones	35	17	49
Rheumatoid arthritis	150	59	40
Addison's anemia	36	36	100
Subacute combined degeneration of cord	24	24	100

Hurst also mentions tuberculosis and acne rosacea as conditions where it is frequently found. Cornell adds exophthalmic goiter to the list.

This rather extensive number of clinical disorders where achlorhydria is found shows that there are one or possibly two disturbances where it is probably 100 per cent present, pernicious anemia definitely and subacute combined degeneration of the cord perhaps. Vanderhoof[10] reports 28 additional cases of the latter condition in none of which was free HCl present. Inasmuch as this type of cord lesion is the one usually associated with pernicious anemia the presence of achlorhydria here is not surprising. Faber[11] estimated that of all achlorhydric individuals 10 per cent develop pernicious anemia. Among the other 90 per cent some may suffer from comparatively less fatal diseases—exophthalmic goiter, arthritis deformans, appendicitis, cholecystitis—although the majority remain in good health (Cornell).

This brings up the constitutional nature of achlorhydria. According to Carlson gastric juice with its free hydrochloric acid and specific ferments appears to be confined to the vertebrate animals. He further states, "The biological significance of this apparently uniform absence of gastric secretion (HCl, pepsins) in the invertebrates and its normal presence in the entire vertebrate phylum is by no means clear. But it would seem that gastric juice is a comparatively late addition to the animal digestive process. It might be worth while to reinvestigate the gastric secretion in the groups supposed to be the nearest relatives of the primitive vertebrates. The late evolution of gastric juice may have some significance in the frequency of chronic achylia in normal persons and the apparent absence of digestive disorders in chronic or temporary achylias

not complicated by motor disturbances in the gut."

Another factor is the influence of the emotions. Cannon's work showed the effect of the major emotions on the motility of the stomach and intestinal tract. "In normal men and animals all painful stimuli cause some inhibition of the entire phase of gastric secretion. Depressant emotions (fear, anger, anxiety, etc.) also depress both the appetite phase and the local secretion phase." (Carlson).

We may meet a situation where there is a combination of three factors. First a nervous reaction characterized largely by disturbances in the emotional field. Second, an unstable individual who may not show normal resistance to strain and stress. Third, a toxic state of greater or less degree due to intercurrent illness or progress of the first condition. Analysis of the history often discloses symptoms referable to the gastro-intestional tract. These may vary from so-called nervous indigestion to major disorders having been found. Study of the patient both at the time of first examination and during the course of observation may reveal further indications of fluctuation in the barometer previously referred to.

Analyses made on one hundred twenty-seven patients in the Norbury Sanatorium for one or the other reasons just mentioned are here reported. It is to be understood that these are not on consecutive admissions but are unselected analyses ordered because some thought of secretory disturbance arose. The results are shown in Table 2.

TABLE 2

	Cases	Per cent
Achlorhydria	42	33
Subacidity	28	22
So-called normal curves	40	32
So-called hyperacidity curves	17	13
	127	100

The diagnoses in the cases showing achlorhydria are as follows:

TABLE 3

Anxiety neurosis	15
Pernicious anemia	9
Involutional melancholia	4
Manic-depressive psychosis, depressed phase	3
Carcinoma (Stomach 1, breast 1)	2
Arteriosclerosis	2
General paralysis of the insane	2
Without psychosis (Heart disease 1, chronic appendicitis 1)	2
Epilepsy	1
Brain tumor	1

It was thought of interest to compare the findings in a group of cases seen in office work by the writer. Gastric analyses on sixty-one patients gave the following result:

TABLE 4

	Cases	Per cent
Achlorhydria	15	25
Subacidity	13	20
So-called normal curve	19	32
So-called hyperacidity curve	14	23
	61	100

The diagnoses in the individuals with achlorhydria in this group were:

TABLE 5

Pernicious anemia	5
Gall bladder disease	2
Carcinoma of stomach	2
Post-operative, gastroenterostomy for ulcer	2
Post-operative, appendectomy	2
Hyperthyroidism	1
Arthritis deformans	1

Gastric analysis is not made by any manner of means on every patient. It is not indicated in many. Consideration of time, of expense, of the inability of the patient to swallow or retain the tube also enter in. As is well known with a history leading to the suspicion of ulcer or of obstruction at the pylorus or of some intestinal lesion radiography is much more satisfactory. Furthermore, radiography gives information about motility which is often more valuable than knowledge of secretion. Alvarez[12] states that he does not often employ gastric analysis except where he suspects achlorhydria, relying more on the x-ray for study of other conditions.

The symptoms arising from insufficient acid in the stomach are by no means constant. The first thing to do in drawing conclusions about an individual who presents history or physical findings of gastro-intestinal disorder is to rule out organic causes, foremost of which is malignant disease. Pernicious anemia comes next though it is usually more obvious from the general examination. The other conditions that have been mentioned must also be considered although they too are usually more readily indicated in the general survey. Then and not until then should one consider the so-called benign achylias. In other words directive search towards a cause rather than symptomatic handling of the complaints should be the maxim.

Alvarez states that the one symptom that can with confidence be ascribed to achlorhydria is

diarrhea, a characteristic feature of which is its tendency to bother the patient only about breakfast time. Flatulence not corrected by dietary regimen is also often associated with insufficient acid. While it may be called the *post hoc propter hoc* type of reasoning this situation has been frequently observed: An individual complaining of digestive discomfort, not relieved by medication with soda, or drug store digestive tablets or perhaps alkali therapy previously prescribed and in whom malignancy, pernicious anemia or some of the other conditions above mentioned cannot be found even after careful radiologic examination, is relieved upon the administration of dilute hydrochloric acid. The greater frequency of this type of reaction in patients with nervous disorders deserves mention again and is explainable on the basis of physiology. Individuals who have been operated upon for a chronic appendix or chronic gall bladder and still have digestive symptoms have frequently been helped by HCl, Whether the appendix or the gall bladder produced reflex depression of gastric secretion or whether these were constitutional achlorhydrias or subacidities with symptoms ascribed to these organs might be a debatable question. Some cases of "irritable bowel" with colitis have shown subacidity and have responded better to bowel management when HCl was included in the treatment.

The treatment of achlorhydria then is first to look for the cause. Replacement or substitution therapy by giving dilute hydrochloric acid must not be relied upon alone. Symptomatic relief is often thereby secured but until one is sure that especially carcinoma or pernicious anemia can be ruled out it is not fair to the patient or the doctor to stop the search. Even then, knowing as we do the possibility of hitherto undiscovered organic basis developing, it is well to have the patient undergo occasional re-examination. The health audit system with check up at stated intervals is all the more important for these people.

The dosage of dilute hydrochloric acid given in the United States Pharmacopea is 15 minims (1cc.) well diluted. The tendency now is to give larger doses, 30-60 minims (2-4 cc.). Quite striking results have, however, been seen with smaller doses. Patients in the Sanatorium are often given frequent feedings of milk and eggs in the attempt to increase their protein intake. The administration of five minims of acid with each feeding, even in those not showing achlorhydria, seems to help in the digestion and assimilation of this concentrated food. The acid should always be given well diluted. This may be in water, orangeade, lemonade, buttermilk or tea. Usually it is given with meals or feedings. Some advise that it be taken forty-five minutes after food. When larger doses are used the teeth should be rinsed or the mixture sucked through a tube.

When the amount of gastric juice (1500-3000 cc.) secreted in a day is considered it is hard to understand how the small amount of acid often given works so satisfactorily. It may be that in some of the conditions herein mentioned amount of secretion is so much lessened that there is enough hydrochloric acid added to raise the concentration and to help peptic activity. However, Bloomfield and Keefer in an experiment designed to simulate secretion of acid in a stomach emptying moderately rapidly found that 60 cc. of n/10 HCl or approximately 6 cc. of U.S.P. dilute HCl needed to be added before free HCl appeared where there was no acid before. Kern, Rose and Austin[13] showed that quite large doses, in one instance 14 cc. or practically half an ounce was necessary to be added to produce the usual test for free hydrochloric acid in a patient with achlorhydria. These authors state "it is conceivable, therefore, that in cases of anacidity gastric physiology may be favorably influenced at times by hydrochloric acid administration without the appearance of free acid, in that the action of the pyloric sphincter may be affected."

Whatever the physiological explanation may be certain conclusions appear to be justified. It is worth while realizing that in some cases of nervous and mental disorders particularly of the functional group the digestive symptoms may be due to insufficient gastric acidity. Certain other cases of so-called nervous indigestion, flatulence, colitis, and other discomforts show when subjected to gastric analysis achlorhydria or subacidity. There may be a constitutional relationship in the insufficient secretion and the other findings. The use of dilute hydrochloric acid in

adequate doses, along with other measures is helpful in treatment of such situations.

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DISCUSSION

Dr. R. C. Brown, Chicago: Mr. Chairman and Members of the Society: I have nothing of fundamental importance to add to Dr. Norbury's excellent presentation. There are however, one or two points that I think are worth while emphasizing. Before making them, I'd like to put in a plea for the old-fashioned methods of examination. Not many busy physicians find it possible to carry out fractional analyses in the course of their routine office work.

I do not think that we ought to produce the impression generally that means of securing information regarding our patients are necessarily difficult or abstruse means that are beyond the reach of the average busy man or create the impression that it is necessary to send patients to laboratories to get results that we ought to be getting in our offices.

Not that Dr. Norbury created such an impression! Not at all! This is no criticism of his viewpoint.

I believe that a very accurate knowledge of the working function of the stomach can be gained by the use of the old-fashioned Ewald test breakfast, combined if necessary with aspirating the stomach at the height of digestion, two and a half or three hours after an ordinary meal, provided that not only is an acid determination made but that the ferments also are determined. That is a simple thing to do with an ordinary milk-curdling test for the determination of rennin. Pepsin and rennin are not disassociated; if one is present, the other will be present.

We should lay a great deal of stress upon the presence or absence of the ferments in the absence of hydrochloric acid because it influences the prognosis. If the ferments are absent in the absence of hydrochloric acid, an achylia exists. If the ferments are retained, there is a secretory function going on in the gastric glands and the prognosis is wholly different.

I have in the Presbyterian Hospital at this time a woman whom I last saw ten years ago. At that time she had an achlorhydria but her ferments were retained. Today she is ten years older, she is fifty-five; she has a perfectly normal gastric juice. That would not be true today if ten years ago the stomach analysis has shown absence of ferments as well as the absence of hydrochloric acid.

It is rather remarkable that the past three decades of clinical observation and research have thrown so little additional light on this whole subject. The writers of a generation ago were perfectly familiar with the intimate relationship between achylia and pernicious anemia. They knew quite well that the absence, the falling out of the gastric digestive function, was compatible with a good state of nutrition, that it did not necessarily lead to any impairment of the general health.

Nothnagel was, I think, if anything more familiar and laid more stress upon the influence of achylia in the etiology of chronic diarrhea than anybody is doing today.

The only notable contribution to our knowledge that has been made on this subject has been the relatively recent observation regarding the powerful influence of histamin in stimulating hydrochloric acid secretion. It has been shown that in a large, possibly a very large per cent—nobody knows quite yet—of the cases that have been clinically classified as achylia gastrica, the gastric tubules are in reality capable of secreting hydrochloric acid under the influence of the hypodermic administration of histamin.

If the Chairman will give me a few minutes extra, I should like to say a word about the therapeutic effect of hydrochloric acid. That is, the mechanism of this effect.

For many years I was under the influence of Dr. Sippy's belief that it was useless to administer hydrochloric acid in cases of achlorhydria or achylia, his idea being that with a normal output of about 1500 c.c. of gastric juice in twenty-four hours, the relatively small amounts possible to administer by mouth were wholly inadequate to influence digestion.

A great flood of light was borne in on me, however, by my observation of one of the members of the faculty of the University of Chicago who, to my certain knowledge, has had an achylia, a total achylia, for fifteen years. During most of these fifteen years he has been emaciated to a degree, physically weak; has had a continuous uncontrollable low-grade diarrhea. Stool examination showed that the basis of the emaciation and physical weakness was the presence in the stools of an enormous content of fat.

In 1919 or 1920, I had an opportunity to see his gastric mucous membrane. He was gastro-enterostomized at that time on account of a very interesting nonmalignant stenosis of the antrum portion of the stomach which was producing an extreme degree of obstruction, vomiting, etc. But that's another story.

The mucous membrane lining of his stomach was as thin and smooth as parchment. The diarrhea during all these years continued to be wholly uninfluenced by any

of the ordinary methods of treatment. The commercial pancreatic extracts were of no avail.

Three years ago I put him on hydrochloric acid in relatively large amounts. The fat began disappearing from the stools, his diarrhea stopped; he has since that time steadily gained in weight and is now in a normal state of nutrition and health.

The point that I wish to make particularly at this time and in connection with Dr. Norbury's paper is that when one administers hydrochloric acid, the effect produced is not to aid the gastric digestion, but to influence favorably the intestinal digestion.

Pavloc found that by smearing the mucosa of the duodenum with acid an outpouring of pancreatic juice resulted. He looked upon that as a reflex. It remained for the distinguished physiologists. Bayliss and Starling, to show the presence in the mucous membrane of the duodenum of a substance known as pro-secretin a chemical substance which is isolatable and whose chemical reactions are known. In contact with hydrochloric acid pro-secretin becomes secretin, the chief stimulant of the secretion of pancreatic juice. Since the pancreatic juice contains steapsin, a fat-splitting enzyme, it is not difficult to understand the striking effect of HCl therapy upon the digestion of fats in the case cited.

If time permitted I should like to mention some cases of combined cord degeneration producing marked spastic paralysis with achylia, and not pernicious anemia, there being perfectly normal blood findings. I should particularly like to talk about some of the chronic diarrheas based upon achylia.

Of most importance, probably, is the relationship of achylia to pernicious anemia and it is difficult to evaluate the influence hydrochloric acid administration may be having in the results now being obtained by the new therapy for pernicious anemia.

However, the combination of liver and the leafy vegetables, citrus fruits and hydrochloric acid is yielding results in pernicious anemia that are remarkable and the cases are showing no tendency whatever to relapse. Day before yesterday I saw the first case that I had placed on this therapy over two years ago. She was bed-ridden, had marked edema, extremely low blood findings and a persistent diarrhea.

Within three months the woman was clinically almost well and now after two years the blood findings continue to show a practically normal blood picture.

Thank you.

Dr. F. G. Norbury, Jacksonville, Ill.: It seems like carrying coals to Newcastle to come to Chicago and talk about some phases of gastric secretion with a discussion such as Dr. Brown has just given us and what we know of the work of Carlson and Sippy. I certainly wish to express to him my appreciation for the discussion.

DIFFICULTIES IN DIAGNOSIS OF TUBERCULOSIS OF THE EYE*

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It is often difficult to recognize tuberculosis when it occurs in the eye. Its symptoms frequently simulate other diseases and are not always characteristic. If this were not the case, the statistics of European and American Clinics would not vary so greatly. In this country only a small percentage of the cases of chronic anterior uveitis are classified as tuberculous, while in Austria and Germany at least fifty per cent. are said to be due to it. One who has visited the hospitals of Vienna could not help being impressed with the large number of cases that are diagnosed as tuberculosis.

Ophthalmologists on this side of the Atlantic are inclined to group only those cases that have definite tubercle formation as being due to tuberculosis and hesitate to place diffuse chronic anterior uveitis under that heading. The microscopic examination of enucleated eyes with diffuse anterior uveitis has not helped us in solving the question because the iris and ciliary body may only show the pathological picture of a chronic uveal inflammation. In most cases there is no caseation and tubercle bacilli cannot be demonstrated in the tissues. Epithelioid and giant cells are found in other diseases and in themselves are not characteristic. If it were practical, the transplantation of uveal tissue from an affected eye into the peritoneal cavity or anterior chamber of laboratory animals would solve the problem in the average case. For these reasons it is difficult to diagnose with certainty diffuse tuberculous iritis.

The presence of minute, gray, avascular nodules at the pupillary border in cases of diffuse iritis is said by Koeppe to be characteristic of either tuberculosis, syphilis or sympathetic ophthalmia. He unhesitatingly classifies cases as tuberculous with nodules of this type, when syphilis and sympathetic ophthalmia can be excluded. However I am not so certain that an unqualified diagnosis should be made on this

*Read before the Section on Eye, Ear, Nose and Throat, Seventy-eighth Annual Meeting of the Illinois State Medical Society, Chicago, May 9, 1928.

symptom alone. The reason for this opinion is exemplified by the history of the following case:

Miss D., a robust telephone operator, nineteen years of age, consulted me January 26, 1928, for failing vision and the appearance of floating opacities in the right eye. The left was unaffected. The symptoms began three weeks before and had gradually progressed. There had been no pain, photophobia or lacrymation. There was slight circumcorneal injection in the right eye; the iris was slightly muddy, and the pupillary border was studded with very small grayish nodules that were barely visible to the naked eye. With the slit lamp and corneal microscope a few cells and fibrin were seen in the anterior chamber. The nodules were similar to those that Koeppe mentions. At one time as many as twelve could be counted. There were numerous dust-like opacities and several large white masses in the vitreous. The retinal vessels were congested but no exudates could be found in the retina or choroid. The clinical picture in the eye was typical of tuberculosis. The vision was Right 20/80, Left 20/25 with lenses.

The Wassermann reaction was negative and the tonsils were normal. No evidence of tuberculosis could be found in the chest or other parts of the body. One dead tooth was found by x-ray, but showed no signs of infection at the apex when it was removed. Sympathetic ophthalmia could be excluded because there was no history or evidence of injury in either eye. The right eye was treated locally with atropine and hot applications and diagnostic doses of Old Tuberculin were given subcutaneously at intervals of forty-eight hours. The first dose of 1/10 mg. and subsequent injections up to 5 mg. did not produce a reaction. The tuberculin did not seem to influence the course of the disease in the least. Theoretically we should have had a distinct focal reaction shortly after injecting the larger doses of tuberculin. With rest of the eye, sodium salicylate and later potassium iodide by mouth the eye slowly cleared and three months after the onset of the disease 20/20 vision was obtained with a -1.00 Sph. $= +1.75$ Cly. ax. 103°.

From a clinical standpoint this was a typical case of tuberculosis of the eye. It had all of the classical symptoms, but its etiology could not be proved. The absence of pain, its chronic nature, and mild inflammatory reaction were characteristic of tuberculosis, but the absence of a focal reaction after the use of diagnostic doses of tuberculin made it impossible to classify the case as tuberculosis.

In the past we have been inclined to look upon tuberculin as a reliable diagnostic agent in tuberculosis of the eye and to place much faith in its therapeutic efficiency. It undoubtedly is of great value in many cases but I feel certain that it is not a specific and further research may show that it is of no more value than other forms of non-specific foreign protein. My confidence in tuberculin as a diagnostic agent has been shaken because of its failure to produce a focal reaction in eyes that were enucleated and proven by microscopic examination of sections to be due to tuberculosis. Focal reactions occur in tuberculosis after the injection of other foreign protein. Lowenstein reports a case in which a focal reaction occurred in a tuberculous eye after milk had been injected. Others have observed similar results.

In a study of the reaction of tuberculin and other foreign proteins in the eyes of rabbits that had known tuberculosis of the uveal tract, I found that the majority reacted focally

Fig. 1. Tuberculosis of cornea showing invasion from iris. (a) Tubercle in iris. (b) Descemet's membrane. (c) Corneal tubercle. (d) Corneal lamellae.

Fig. 2. Tubercle on posterior surface of cornea in a case of uveal tuberculosis.

Fig. 3. Tuberculosis of the iris.

to large doses of tuberculin when admnistered subcutaneously. I also found that other proteins produced similar reactions. In one instance a severe reaction with a large hemorrhage into the anterior chamber occurred after the intravenous injection of typhoid vaccine. Further research is in progress to determine whether this phenomenon occurs frequently.

It is often very difficult to classify lesions of the cornea. The pathology of chronic interstitial keratitis is quite similar in a number of conditions and the clinical picture consequently is much the same. Tuberculosis is rarely primary in the cornea. When it occurs it is usually associated with tuberculosis of the uveal tract and the sclera is also often invaded. When yellowish caseated areas are present at the base of the iris and the cornea becomes involved tuberculosis should be suspected. In iris tubercles the nodule often touches the cornea and extends into it. Fig. 3 illustrates this. In the case from which the section was made the disease began in the ciliary body and was carried by the aqueous into the anterior chamber. The pupillary border and base of the iris became invaded and from each place the process extended into the cornea. The condition had been diagnosed sarcoma of the iris and the eye was enucleated and sent for microscopic examination. Later the patient was referred to me for treatment of the other eye. A focal reaction did not occur after diagnostic doses of Old Tuberculin were administered. The eye was not influenced in the least by any form of treatment and after nine months the vision was lost and the globe shrunken. In this case tuberculin did not help although the clinical and microscopic pictures were typical of tuberculosis. This form of tuberculosis should have offered little difficulty in making a diagnosis because of the presence of caseated tubercles in the iris and the yellowish avascular nature of the corneal lesion.

The clinical appearance of syphilitic interstitial keratitis, on the other hand, is identical with diffuse tuberculous keratitis and in the absence of a positive Wassermann reaction and other signs of congenital syphilis it may be impossible to make a differential diagnosis.

Scleritis and episcleritis are very frequently due to tuberculosis. Verhoeff said: "Now if there is any one thing of which I am sure, it is that ordinary scleritis and keratitis, that is to say, anterior nodular scleritis, are always due to tuberculosis." I think that he is right although in my experience I have found three cases in which I have been unable to positively prove the etiology. It is possible that in some of the obscure cases syphilis and focal infection may be the case.

Because of the position of the ciliary body inflammatory foci in it cannot be seen, and the cause of inflammation in this structure is always obscure. Disease in this portion of the eye if protracted and relatively free from pain and accompanied with periods of improvement and remission, should suggest tuberculosis. Large whitish mutton fat deposits on the posterior surface of the cornea are also characteristic (Fig. 5) and often nodules occur in the iris. The cornea and sclera may become invaded also. I am sure that many cases of

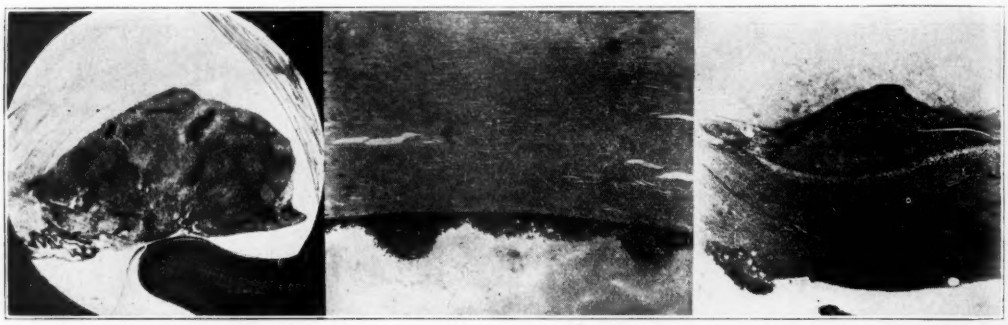

Fig. 4. Tuberculosis of the iris. Eye removed for sarcoma of the iris.
Fig. 5. Mutton fat deposits on posterior surface of the cornea in tuberculosis of the ciliary body.
Fig. 6. Tubercle of choroid and retina. Case diagnosed intraocular tumor. Diffuse.

tuberculosis of the ciliary body are overlooked. I have seen it several times in microscopic sections of eyes in which its presence had not been suspected before the enucleation. This conforms with the experience of Fleischer who in 1914 found evidence of tuberculosis in the anterior segment of the eye in a case with tuberculosis of the retinal vessels. His view was that tuberculosis of the retinal vessels was preceded by tuberculosis of the ciliary body. Verhoeff's view in that the origin of chronic ocular tuberculosis in general is due to the passage of the tubercle bacillus from the ciliary body into the aqueous and from there it is carried to other parts of the eye when it lodges and produces secondary foci.

Miliary tuberculosis of the choroid is easily diagnosed. The isolated yellowish nodules are characteristic and the history of generalized or meningeal tuberculosis give confirmatory evidence. It is seen so frequently as a terminal stage that few cases survive for a long period of time. The etiology of disseminated choroiditis or chorio retinitis, on the other hand, is extremely difficult to determine. The tuberculous form is usually more extensive than other types and there is a tendency for one lesion to blend imperceptibly with another. The edges of the infiltration are irregular, the retina elevated and edematous. The illustration of diffuse retinal tuberculosis in Adam's atlas is a good example of the ophthalmoscopic appearance of the active stage of the disease. The end result is widespread pigmentation and atrophy of the retina and choroid. All of us are familiar with this fundus picture.

The solitary tubercle frequently is confused with tumor or gumma. As a matter of fact it may be impossible to make a differential diagnosis in the early stage. A striking example of this is illustrated by the following history.

Mrs. H., aged 37 years, was seen on April 20, 1921, complaining of blurred vision in the right eye. She gave the history of a suspicious small carcinoma of the right breast which had been successfully removed about one year before. In addition to this she had suffered from pulmonary tuberculosis for which she went to Colorado in 1919. Just prior to the time that the scotoma was first noticed, the tuberculosis became active again. There was no evidence of recurrence of the tumor of the breast or involvement of the adjacent lymph glands. The tension of the right eye was 22 mm. "Gradle" at the time of the first examination; an absolute scotoma was present in the lower nasal field; and an irregular slightly elevated area that measured about 2½ disc diameters across was seen in the upper temporal quadrant of the fundus. The left eye was negative.

Because of the renewed activity of the tuberculosis in the lung and the time that had elapsed since the breast had been amputated, it was concluded that the fundus lesion was tuberculous in character. Old Tuberculin was given and what was interpreted as a focal reaction occurred. B. E. Tuberculin was then given cautiously at regular intervals. However, the retina ultimately detached just below the lesion. Three months after the onset of the disturbance in the right eye the vision began to fail in the left, and a small oval area that resembled a choroidal tubercle was seen near the macula of the left eye. This gradually increased in size and underwent changes that were exactly similar to those that had taken place in the fellow eye. Both retinae became completely detached

Fig. 7. Tuberculosis of retinal vessels. Early appearance.

Fig. 8. Tuberculosis of retinal vessels; late change showing perivascular exudate and at junction of veins and constriction of walls. Note the hemorrhages into the retina.

Fig. 9. Terminal stage of tuberculosis of the retinal vessels—retinitis proliferans and localized detachment of the retina.

and the patient was blind for several weeks before her death. During the course of the eye disease the patient was under the care of an exceptionally competent internist who supervised the administration of the tuberculin. The patient died five months after the onset of the eye trouble from what appeared to be a tuberculoma of the brain. Permission for an autopsy was flatly refused and we were never able to determine with certainty whether the disease in the eye and brain was due to tuberculosis or to metastatic carcinoma. There was fever, and tubercle bacilli were found in the sputum just prior to death. We attached much importance to the focal reaction following the administration of tuberculin and felt that the process in the eye was due to tuberculosis. However, this might have been a coincidence and not a true reaction. The widespread detachment of the retina favored tumor because in tuberculosis there is usually enough inflammatory reaction at the edge of the lesion to firmly bind the retina to the choroid and to prevent its separation.

Another example of a difficult case is the following: Mrs. P., aged 30 years, complained of having had poorer vision in the right than in the left eye for over ten years. The early history was vague. Five days before the examination the central vision of the right eye became poorer and has steadily grown worse. She had been under the care of an eye, ear, nose and throat specialist who opened and drained the ethmoidal sinuses. The tonsils had been removed, but no improvement occurred. When she was first seen the vision of the right eye was 15/200 eccentric, the left 20/20. Her general health had always been good, but she gave the history of having nursed tuberculous patients in the past. The eye had not been inflamed. There was a slight haziness of the vitreous and a small yellowish, slightly elevated area present in the macula. Nothing abnormal was found in the anterior segment of the eye when it was examined with the slit lamp and corneal microscope. The Wassermann reaction was negative and no evidence of focal infection could be found in the body. There was slight dullness to percussion over the apices of both lungs but no evidence of activity was detected in the chest. The temperature in the afternoon was normal. A tentative diagnosis of either tuberculosis or tumor of the choroid was made and a course of diagnostic injections of tuberculin was advised. At this stage of the examination I left for a trip to Europe and did not see the patient until four months later at which time a cataract was present and the eye was blind and painful. She stated that shortly after I had left the eye became red and the condition diagnosed glaucoma. She was using eserin when I saw her. Because of the pain in the eye and the history of glaucoma I felt convinced that the symptoms were due to an intraocular tumor and urged enucleation even though the tension was 18 Mg. of Hg. Schiötz at the time. She was greatly relieved and gained ten pounds in the three weeks after the eye had been removed. Microscopic examination revealed the presence of a solitary tubercle that involved the choroid and retina in the macular region. The center of the mass was caseated and several giant cells were present. Fig. 6. The ophthalmoscopic appearance and the history did not give us sufficient evidence to make a diagnosis in the two cases that have just been described.

Lesions that heal and become definite scars are probably tuberculous in character. Mrs. S., aged 36 years, is an example of this type. She consulted me November 15, 1927. Her symptoms were similar to the early symptoms of the last case that has just been reported. When she was first seen a yellowish tubercle was present in the macula. After the administration of .008 mg. of O. T. the lesion became more hazy and swollen and a minute hemorrhage occurred near its lower nasal border. Under hygienic measures and the administration of small doses of tuberculin "B. E." the activity in the eye gradually subsided and she gained twenty pounds in two months. When she was last seen a choroidal scar with pigmented borders was present and the disease had evidently run its course. There was no evidence or history of malignancy; the Wassermann reaction was negative and no focus of infection was present. The disease was classified as tuberculosis.

It is exceedingly difficult to diagnose retinal tuberculosis. It occurs in several forms and may closely simulate other types of retinitis. It frequently is associated with disease in the choroid. In a large series of experiments on rabbits it only occurred independently of the choroid in two cases.

Retinal tuberculosis is seen most frequently in one or two forms, i. e., retinal perivasculitis or isolated tubercles in the retina itself. Occasionally mixed forms occur.

The isolated spots that involve the macula may approach the appearance of the spots of renal retinitis. They are usually less brilliant and their edges fade gradually into the surrounding fundus. Jackson[1] and Knapp[2] have published splendid plates and descriptions of this type of case. They may be difficult to differentiate from the exudates of renal retinitis, diabetes and vascular sclerosis.

Retinal periphlebitis is easily diagnosed and in most cases is due to tuberculosis. When associated with perivascular exudates at the junction of venous tributaries it is, in my opinion, a tuberculous process. It begins in the periphery of the fundus and gradually travels backward toward the optic nerve. Hemorrhages occur early into the retina and vitreous and frequently obscure the true nature of the fundus disease. In recurrent hemorrhages into the

retina and vitreous tuberculosis is often the cause. However, I feel convinced that it is not always the etiology. Several years ago I analyzed a series of cases and reviewed the literature on this subject and came to the following conclusions:

1. Recurrent hemorrhages into retina and vitreous in young persons is probably not a specific disease.

2. Tuberculosis of the retinal vessels, especially the veins, is one of the common etiologic factors.

(a) To prove that the cause is tuberculosis, a focal reaction should be obtained.

(b) When due to tuberculosis, improvement follows the administration of tuberculin and hygienic treatment.

3. Syphilis is an occasional cause.

4. Focal infection is a possible cause.

5. Hemophilia is not a cause, but might be a contributing factor.

6. The hemorrhages are the result of a localized pathologic weakening of the blood vessels, and increased blood pressure or exercise are only exciting causes.

7. The veins are usually attacked.

8. In some cases there is involvement of the retina early in the disease.

9. In most cases the earlier changes occur in the periphery of the eye, and if patients were examined in the early stages of the disease, we would learn more about the pathology.

10. Retinitis proliferans occurs in most cases.

11. I believe the disease is primarily in the retina, and that the partial or complete detachment of the retina is due to traction from scar tissue and not to subretinal hemorrhages from the choroidal vessels, as has been suggested.

Jackson[3] states: "The clinical picture that it seems important to fix in relation to retinal tuberculosis includes these features; vitreous opacities, recurrent hemorrhages, enlargement of the retinal veins, local lesions described (small white spots in the macula) associated with enlargement of the retinal veins, white spots in the macula in some cases, optic neuritis and retinitis proliferans as a terminal condition."

Tuberculosis of the optic nerve is so rare and should offer no difficulty in diagnosis.

When the disease occurs in the conjunctiva its diagnosis is usually easy. Microscopic examination of the tissue and animal inoculations can be made without difficulty and there should be no reason for confusing it with other processes.

The lacrymal sac is a frequent source of tuberculosis. Stock found it in a large percentage of his cases. It usually is not diagnosed until after the sac is extirpated and examined under the microscope.

Periosteitis of the orbit may be due to a number of causes and it is usually difficult to diagnose. Biopsy and animal inoculations of the diseased tissues should be resorted to in all cases.

From a rather wide experience in ocular tuberculosis I have come to the following conclusions:

1. All cases of tuberculosis of the eye present difficulties in diagnosis.

2. Tuberculosis of the eye may closely simulate other chronic eye diseases and in some cases the only positive means of determining the cause is microscopic examination or animal inoculation.

3. Tuberculin as a diagnostic agent is unreliable. It may aid in some cases.

4. Focal reactions in tuberculous lesions are not specific but may occur after the injection of foreign proteins other than tuberculin.

5. A diagnosis must usually be based on the history, clinical appearance, and course of the disease. If a focal reaction occurs after the injection of diagnostic doses of tuberculin it is merely additional evidence.

217 Imperial Building.

CASE ILLUSTRATING SUCCESSFUL CONTROL OF DIABETES INSIPIDUS by SYSTEMATIC INTRA-NASAL USE OF PITUITRIN

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A description of the following case of diabetes insipidus successfully treated by the application of pituitrin to the nasal mucosa will, I believe, be of interest, as a scrutiny of the literature does not show a similar instance of the systematic use of pituitrin for the control of polyuria by nasal application.

Patient 47 years of age, widow, in good health

at the time of beginning of the polyuria in April, 1922. Medical history prior to onset furnishes nothing of significance—x-ray of cranium negative.

The polyuria developed rapidly, was accompanied by decided nervous reaction, and by a marked diminution in menstruation leading quickly to cessation, but not by any other disturbance. At this stage the quantity of urine voided in twenty-four hours ranged from twelve to fourteen litres, and the maximum excretion fifteen litres, and the patient resorted to the administration of one ampoule of Parke Davis & Company's obstetrical Pituitrin hypodermically every other day. This dosage proved insufficient as the effect was apparent for a period slightly less than twenty-four hours, and necessitated a change to one ampoule daily, subject however to frequent unavoidable interruptions and irregularities in the time of the administration. For approximately twenty-four hours following each injection the amount of urine voided was reduced to six or seven litres—i. e. one-half the former daily average without treatment, but the patient began to show the effect of broken rest at night.

Upon resorting to nasal application, Parke Davis & Company's oral Pituitrin was employed in sterile salt solution, varying from one part in five to full strength, but the weaker solution was soon discarded in favor of the full strength.

The patient under ordinary circumstances is comfortable with two applications daily, one at eight A. M. and one at eight P. M., but three are better, and are made at eight A. M., three P. M. and upon retiring. At the present time not more than half a glass of water is taken during the night. Unremitting use of the preparation has not resulted in establishing toleration, as far as can be observed, since the amount of pituitrin required, and the effect obtained bear the same relation now as at the beginning of the treatment nearly six years ago.

Technique employed is as follows: Moisten with ten or twelve drops of pituitrin a flat piece of cotton the size and double the thickness of a nickel. Take up the same with a nasal forceps or similar applicator and carry up and slightly backward to the anterior surface of either one of the middle turbinate bodies, pressing the cotton gently and firmly against the turbinate and adjacent mucosa. Withdraw the applicator taking the precaution not to dislodge the moistened cotton and allow to remain until the time decided upon for the next application when the procedure is repeated on the opposite side and in the same manner.

Applied in this way, in the location described, there is no discomfort and no interference with nasal breathing and the patient experiences only a slight stinging sensation and on rare occasions a slight irritation similar to that of a mild coryza which always has disappeared following temporary removal of the cotton for an hour or two.

Applications have alternated and have never been made on both sides simultaneously.

Removal of the cotton is effected by the careful use of a nasal forceps, taking precaution not to injure the mucous membrane and the necessary skill on the part of the patient should be only a question of practice.

To the Editor:

Although Oral Pituitrin was discontinued by Parke Davis & Company last year by request of the "Council" Pharmacy A. M. A. its use was continued in the above case because of its convenient form and quantity in the original packages. In reduced dosages the "Surgical" could have been employed or the "Obstetrical" could have been used in the same dosage as the Oral.

THE MENACE OF A SO-CALLED INDUSTRIAL VISUAL SURVEY; ITS REPLACEMENT BY A METHOD UNDER THE SUPERVISION OF AN OPHTHALMOLOGIST*

C. F. YERGER, M.D.,

CHICAGO

That I have taken advantage of a time-worn prerogative in vogue in our medical societies of having the Chairman of a Section read a paper known as the "Chairman's Address" is due to the timely suggestion of our confrere, Dr. G. Henry Mundt, President of the Illinois State Medical Society, who, in his many contacts throughout the state, in the interest of things medical, has been the recipient of various complaints concerning a vicious method of making a so-called survey of vision in industry and

*Chairman's address before Section on Eye, Ear, Nose and Throat, Seventy-eighth Annual Meeting, Illinois State Medical Society, Chicago, May 8, 1928.

which he thought of sufficient importance to demand our urgent and immediate attention, investigation and consideration. He, therefore, suggested that I as Chairman of the Section of Eye, Ear, Nose and Throat make this subject the Chairman's Address, but as the task is so great and of such importance that, although I fear he has made the selection of myself unwisely, I nevertheless accepted the assignment, when he promised, to lighten the labor of this investigation, by arranging for the assistance of the Educational Committee of the Illinois State Medical Society and in acknowledgement of this aid, I am especially grateful to Miss Jean McArthur, the Secretary, for her generous and efficient co-operation.

The type of visual survey that is a distinct menace because it implies that which it is not, namely, a complete scientific examination of the eyes, whereas it is just the opposite, as it is but a superficial and perfunctory attempt at making a visual acuity test and a manifest refraction.

The usual method of one of these so-called visual surveys is as follows; a firm of wholesale-retail opticians or optometrists obtains permission to make a test of vision and refraction at the plant or place of business of all employees without cost to employer or employee and in the event that the employee needs glasses they shall be supplied at a flat rate to be paid by the employee and in case he defaults, the employer may withhold the amount charged for the glasses from the salary of the employee.

Obviously, the concerns permitting this have been misinformed and misled into believing that such a refraction made at the plant or place of business can be satisfactory.

Following in the wake of one of the so-called visual surveys, it is the common experience of opthalmologists to encounter many dissatisfied employees who are unable to wear the glasses prescribed for them.

In a complaint made to the State Department of Health of Ohio,[1] against one of these so-called visual surveys, it was found that the optometrists doing this work took but from three to five minutes for each examination, that many of the employees receiving their glasses could not wear them and that this was working a financial hardship upon them.

Due to the activities of a certain type of wholesale-retail opticians and itinerant optometrists, the incidence of this sort of visual survey is on the increase, especially in and about Chicago and in other industrial centers throughout the state and nation.

The remedy for this menace is its repeated exposure, the education of the public and the medical profession and especially those responsible for its spread into industrial and commercial establishments, as the executive officials of these concerns and in some cases, I am sorry to state, to the complacent indifference of the industrial physician in not opposing such an attempt when it is first proposed.

The committee appointed by the Chicago Ophthalmological Society to investigate the subject of industrial visual surveys, in its report, March, 1927, in part recommended that the Chicago Ophthalmological Society secure the co-operation of the Chicago Society of Industrial Medicine and Surgery, the Chicago Medical Society and the Illinois State Medical Society in diverting this work from the non-medical refractionist to the ophthalmologist.

At a recent meeting of the Chicago Ophthalmological Society, it was stated that 50% of the general practitioners do not know the difference between an optometrist and an ophthalmologist or oculist. Be that as it may, from my own knowledge, I know of but few instances where the general practitioner preferred to refer his cases for refraction to an optometrist rather than to an ophthalmologist.

The ophthalmologist being a physician is not limited by law to any method of refraction as is the case with the optometrist who cannot use, recommend or prescribe drugs to aid him in his refraction work. The ophthalmologist appreciates the value of a cycloplegic drug and uses it whenever needed in the refraction of his patients. The advantage, in these cases, is that the cycloplegic drug produces a temporary paralysis of the ciliary muscle which places the power of accommodation in abeyance so that the latent refraction may be accurately measured. It is just in this class of cases that the optometrist fails and falls into the error of prescribing incorrect glasses. One is not able without the use of a cycloplegic drug to sufficiently inhibit the ac-

tion of the ciliary muscle by any method which will prevent the patient accommodating.

Moreover, an error of refraction is not the only cause of loss of visual acuity. There are many other causes that are beyond the ability of the non-medical refractionist to recognize, as faulty development of the eye, and acquired pathological changes of the eye due to systemic and local diseases. Indeed, the first intimation of the presence of a grave systemic disease is often manifested in the eyes as, syphilis, focal infection, nephritis and diabetes, and in diseases of the nervous system, in tabes, general paresis, multiple sclerosis and brain tumor. Glaucoma is one of the most prolific causes of blindness in persons over 40 years of age. Infinitely more important to the patient than the correction of an error of refraction is the diagnosis in its incipiency of the presence of glaucoma because its successful treatment necessitates an early diagnosis and treatment before irreparable damage to the optic nerve has resulted in permanent blindness. On the other hand, if the glaucoma is diagnosed and treated early, the disease is ameliorated or arrested and the patient is able to retain useful vision. It is, indeed, unfortunate for the person who had his eyes tested and glasses prescribed for him by an optometrist when what he actually and urgently needed was general medical or local eye treatment or both for some serious disease and not glasses. The patient is thus led into a state of false security by reason of his confidence in the ability of the optometrist to recognize and correct any condition of the eyes thereby losing valuable time which should have been made use of in instituting early and intensive treatment of his disease and thus prevent irremediable blindness and loss of health.

A complete and scientific examination of the eyes can only be expected of one thoroughly versed in the science of ophthalmology and should include, the testing of the visual acuity, the examination of the eyes for the presence of external eye diseases; the testing of the extra-ocular muscles for the presence of muscular imbalance or squint; the testing of the refraction, with a cycloplegic in all persons up to the age of 40 years when not otherwise contra-indicated and without a cycloplegic in the remainder; the examination of the eyes for the presence of internal eye diseases; the testing of the color vision; the perimetric, campimetric and tonometric examinations. With such a comprehensive examination, it is not to be wondered at, that the first intimation of the presence of eye pathology indicative of serious local or constitutional disease is not infrequently discovered during the course of a refraction by an ophthalmologist. Such an eye examination should lessen decidedly the frequency of industrial accidents and increase the efficiency of the worker, thereby increasing production and reducing wasteage in industry. Also, it is of material advantage to the industrial accident insurance company in the medico-legal cases of eye injuries to have recourse to the ophthalmological record of the case.

No arbitrary standard of visual acuity can be made in industry, generally speaking, because the visual acuity requirements must necessarily differ in the various industries and occupations. From the standpoint of the visual acuity tests, some railroads group their employees into different classes, depending upon the hazard and character of the work and whether the tests are made for entrance into the service, promotion or periodic examination. In the operating service, they require a normal visual acuity test for both distant and near vision, with or without glasses. On the other hand, one of the largest industries in this country accepts applicants for employment, so far as the visual acuity is concerned, if the vision is 20/40 or better in one eye and 20/50 in the other eye, with or without glasses, which vision is worse than that classified as moderately defective, viz., 1. Normal vision, 20/20 or better in both eyes, 2. Moderately defective vision, 20/40 or 20/30 in one eye and 20/40 or better in the other eye, 3. Markedly defective vision, 20/50 or less in one or both eyes.[2] The consulting ophthalmologist is the best judge of the visual requirements in any specific case and it should be left entirely to him.

The following is a tentative working plan for an industrial visual survey under the supervision of an ophthalmologist and may be modified to suit the necessities of the case.

A general screening test is made at the plant or place of business. The visual acuity of each employee for distance, without glasses is obtained by means of the Snellen test-type chart. This can be done by a nurse or employee especially trained for this test or by the industrial physician. All employees having normal vision, i. e., 20/20 or better in both eyes, are passed. All employees with sub-

normal vision, i. e., 20/30 in one eye and 20/30 or better in the other eye to markedly defective vision should be referred to an ophthalmologist. The visual acuity of each employee over 40 years must be tested for presbyopia, as the vision may be normal for distance but defective for near work. In the near vision test, the employee should be able to read the Snellen 0.5 at 20 inches and the amplitude of accommodation should correspond to the working distance. The visual acuity of each employee wearing glasses is taken with his glasses on both for distance and near vision. If the distant vision is less than 20/20 or the near vision less than 0.5 at 20 inches, the employee should be referred to an ophthalmologist. An employee with symptoms of asthenopia or eye strain should be referred to an ophthalmologist regardless of the visual acuity with or without glasses. Any employee found deficient in the test for color sense should be referred to an ophthalmologist.

Employees having defects of vision that cannot be corrected by glasses to meet the prescribed standards should not be placed in hazardous occupations but should be given some other position.

If industrial visual surveys shall continue to be made by optometrists instead of under the supervision of ophthalmologists, the refraction work should be performed at the office of the refractionist and not at the plant or place of business and should be limited to the refraction of employees over 40 years of age and if the optometrist is unable to improve the vision to normal, or to 20/20 in each eye, the patient should be referred to an ophthalmologist.

Finally, I wish to emphasize, that the medical profession is in sympathy and will co-operate with any scientific progressive movement for the attainment of the conservation of vision and the promotion of the efficiency of the worker in industry; it is not opposed, but on the contrary, is heartily in favor of industrial visual surveys when they consist of what their name should imply, i. e., a complete and scientific examination of the eyes which should embrace the determination of the presence or absence of 1. an error of refraction, 2. an extra-ocular muscular imbalance or squint, 3. color blindness and 4. any pathologic or diseased condition of the eyes. Anything less than this is a snare and delusion and provocative of great harm and injury to the employee who has faith in the medical ability of the examiner, but who does not know the difference between an optometrist and an ophthalmologist or oculist.

4458 Madison St.

1. Kindel, D. J.: Report of Investigation of Eye Examinations in a Shoe Factory, Bulletin, American Assn. Indust. Phys. & Surg., July, 1927.
2. Public Health Reports, Reprint No. 979, Dec. 19, 1924.

CARCINOMA OF THE MOUTH

And the Use of Radium Emanations In Its Treatment*

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There is no more brilliant achievement in radio therapy than that which is obtained from implants of radium emanation or radon in carcinoma of the mouth. Briefly, it is usually possible to get symptomatic cures of accessible carcinomas in the mouth by this treatment. This applies not only to small localized carcinoma in the mouth, but even to lesions which are so extensive as to appear hopeless of any benefit. Even in some unpromising cases the results have been permanent for a good many years. As with surgery, however, there is no way of getting assurance against metastases in the neck or elsewhere and in many cases such metastases occur. But even if this occurred invariably the treatment would be well worth while by giving the patients a clean mouth and relieving them of the torture of slow death from carcinoma of the mouth. The treatment also has the advantage of avoiding the mutilation of surgical procedures in the mouth, to say nothing of the advantage of equally if not more radical results. We believe that the results altogether justify the statement that the treatment of carcinoma of the mouth with radium implants should supercede the treatment by surgical procedures.

The technic of treatment of carcinoma of the mouth with radium implants is the same whether the cancer involves the tongue, cheek, floor of the mouth, or tonsil. We do not use it in epithelioma of the lower lip because these growths are treated more satisfactorily by other methods.

Cancer may originate at almost any point in the interior of the mouth. Involvement of the tongue is more frequent than that of the cheeks

*Read before the Section on Medicine, Seventy-eighth Annual Meeting of the Illinois State Medical Society, Chicago, May 11, 1928.

or gums. Cancer of the tongue is of the squamous type, and if left untreated is fatal within two years after the onset. The rapid growth and early dissemination is due to the rich blood and lymphatic supply, also, the more or less continual motion of the organ. The prognosis of the tongue lesions depend on the point of origin of the malignancy. For convenience the tongue can be divided into two portions, the anterior and the posterior, the dividing line being made at the circumvallate papillae. The anterior tumors are diagnosed and treated earlier. The posterior, or those located at the base of the tongue, are diagnosed after they are well developed. They are hard to reach with any method of treatment. The metastases are earlier in the posterior lesions and are discovered about the same time as the primary tumor. It is fortunate that most of the tongue cancers are situated on the anterior portion of the tongue. The most favorable lesions for treatment are those that are well localized without invading much of the surrounding tissue and before it has spread to the lymphatics or blood stream.

Cancers of the buccal membranes frequently follow extensive leukoplakias and more attention should be given to beginning leukoplakias. After cancer of the cheek has once developed it invades and infiltrates the muscles, skin, as well as the soft tissues of the lower and upper jaws. Like the tongue, the movement of the cheeks tends to spread the carcinoma. The glands are involved fairly early in the average case. The malignancy is about the same degree as the tongue lesions. It is fortunate that cheek lesions are diagnosed early; that they are accessible and favorable to the implantation of radon. In some of the tumors it is of value to cross-fire from the outside with x-rays or radium.

Carcinoma of the floor of the mouth remains localized only a short time. The arrangement of the muscular layers helps to extend the malignancy to the adjacent structures. The base of the tongue is involved frequently, so that the same can be said here as for the posterior tongue lesions. Other tumors press on the periosteum and extend to the bone.

Malignant disease of the tonsils, whether squamous-celled carcinoma, or sarcoma, is fortunately not very common. As a rule carcinoma of the tonsil is first observed about three to four months after the onset. At this stage valuable time is lost because it is often treated with caustics and anti-syphilitic remedies. After the disease has once extended to the peritonsillar tissues it becomes more difficult to treat, and is then a hopeless situation. Surgery in malignant disease of the tonsil has been abandoned in favor of radiation. Radon therapy has been fairly successful because the tonsil in later life has a poor blood supply and is atrophic. Of course, the prognosis is better if treatment is instituted before the cervical nodes are involved.

We believe that a clinical diagnosis is of more value in the intra-oral growths than a microscopic. In many cases, particularly the later ones, a clinical diagnosis of cancer is sufficient. A positive microscopic finding is of value, while a negative report does not exclude malignancy. Inflammatory and epithelial growths of the mouth and skin are often difficult to differentiate from malignant lesions by means of the microscope.

Radon is the highly radio-active emanation in the form of gas which is given off by radium. It loses its radio-activity rapidly, but when fresh is as highly radio-active as radium itself. It is extracted from radium solution by means of a special apparatus. The radon is concentrated and sealed in small glass or gold capillary tubes. The implants are 3 to 4 millimeters in length and 0.5 millimeters in diameter and are commonly known as "seeds." They are commercially obtainable and inexpensive. In our work we have obtained the best results by using glass seeds of 0.5 millicurie and gold of 1 millicurie strength. They are implanted one seed to each cubic centimeter of malignant tissue. The number of seeds needed in a case is thus relatively few. One can hardly use more than ten to fifteen seeds in the most extensive case in the mouth. To estimate the number of seeds required the growth is divided into imaginary cubic centimeters. One seed is placed in each cube. A uniform reaction is produced if the tubes are placed one to every cubic centimeter of pathological tissue. It is desirable to keep the implants five millimeters away from the surrounding normal tissues such as blood-vessels, nerves, and bones. A necrotic area develops around the glass seeds from the beta rays. The gold seeds produce a very slight amount of

necrosis because the wall thickness of 0.2 millimeters absorbs ninety per cent. of the hard beta rays giving practically only gamma radiation. The gold seeds are gradually taking the place of the glass seeds in the treatment of intra-oral cancer.

The insertion of the seeds is a simple process which can be done with or without local anesthesia. A wire needle of a trocar is withdrawn a short distance from the point of the trocar; the trocar is then loaded with a seed by means of a forcep. The trocar is then inserted into the tumor mass the desired depth and withdrawn slightly to make a pocket for the seed. By means of the needle the implant is pushed into the pocket.

The decay of the radon is continuous, one-half of its activity is spent in 3.85 days and 99.5 per cent. in thirty days. At the end of thirty days the seeds are inert and by this time they have either become encysted or sloughed out. The total dose delivered from one millicurie is 132 millicurie hours.

The reaction from the seeds occurs a little earlier than from the surface application of radium. It begins in about a week, is usually at its height in 10 to 21 days, and then gradually subsides. During the reaction the lesion becomes swollen and painful. The tissues adjacent to the lesion treated with radon often become painful; this may be unavoidable. After the reaction subsides the lesion softens and heals slowly.

It has been our practice to use a large initial dose to destroy the growth at an early stage or before extension has taken place. Second applications do not respond so readily as the first, because part of the tumor has been replaced with fibrous tissue. It is for this reason that we try to make the first treatment all that is to be given, but it is advisable to give a dose which produces only as slight an amount of caustic action as is consistent with complete destruction of the carcinoma.

The treatment of the cervical nodes is more of a problem than that of intra-oral cancer. Recently the trend has been to be more conservative in the handling of this special problem. The lymph glands are true protective organs against cancer and secondary infection, therefore, interference with their natural defense should be cautious. The glands of the neck become involved in one of two ways: either by direct growth along the lymph vessels, or by cell emboli becoming lodged in the glands. Superficial papillary lesions of the mouth do not extend or metastasize as rapidly as the deeply infiltrated tumors. Also, cancer of the tongue and tonsils metastasize earlier than those of the cheek and floor of the mouth.

In the cases where the nodes are not palpable we treat the front and sides of the neck with filtered x-ray. In these cases without glands, x-rays perhaps stimulate the protective defenses of the nodes as well as destroy the metastatic foci. The patients are given two or three courses of x-ray treatment and are examined frequently to see if palpable nodes develop. The enlargement of the glands is usually the first sign of cancer in the neck. But it is to be remembered that all enlarged glands are not due to cancer; many are inflammatory. If they are inflammatory at first, it later gives them a better chance to become involved with cancer, because the cancer cells are carried along with the inflammation. It is necessary to keep the mouth in the best possible shape to prevent such an infection.

If the glands are clinically malignant and only one or two involved, they are best treated by having them removed surgically. X-ray treatment of course should be given before operation and shortly afterward. In those cases in which the nodes are palpable, x-rays tend to inhibit the progress of the disease and perhaps makes the patients a safer operative risk.

In the later stages, where the glands are involved and the capsule ruptured, the process extending to many glands and lymph vessels, it is a problem of handling immovable nodes that are fixed to the surrounding structures. These cases, of course, are inoperable. The best that can be done here is palliative treatment with x-rays or by the implantation of radon in the tumor mass.

DISCUSSION

Dr. H. A. Potts, Chicago: I must corroborate the remarks of the speaker, Dr. Pusey, and concur with what was said in the paper. When we read statistics and hear men report results, we are at times a little disappointed. At least we cannot duplicate in such a brilliant manner, many times, as was outlined by the statistician.

Early diagnosis, of course, is the secret in the treatment of carcinoma and its cure—because we *do* cure a few when we get them early enough.

but as Dr. Pusey has said, it is difficult to make an early diagnosis.

There is one very serious thing which happens, especially in the mouth, and that is when some lesion appears the diagnosis is not made but a little iodin is put on it telling the patient to return the next week to see how it is. The patient returns, the lesion may be no worse, but it is not any better and perhaps a little trichloracetic acid or some other drug is put on and he comes back in another week. This continues for an amazing length of time, frequently until there is no question about it clinically; then it is too late. Consequently, it has been my rule to advocate to my students that any lesion in the mouth which does not greatly improve within two weeks, even if nothing is done, should be looked upon with suspicion.

In regard to removal of the glands, I think I have noticed that the glands are protective organs and that in carcinoma of the lip, for instance, which is seen fairly early, with no palpable glands or even with one or two glands very slightly enlarged, as Dr. Pusy has said, they may be inflammatory. If they are, well and good. If they are just at the beginning of a metastasis, those glands are certainly active enough to pick up a few more cells which might be dislodged by operative procedure; consequently we have been removing the primary growth and treating the glands in the neck with x-ray. The results have been satisfactory, I think.

If the glands continue to enlarge, then we do a radical excision of all the gland-bearing material, not only what is visible but do a sharp excision of all the gland-bearing area. That applies more particularly to malignant growths on one side of the mouth, but in the tongue it is different, as metastases may occur on both sides.

The advent of the gold radon tube, I think, is a great improvement. When the old radium needles were used, especially in the jaw—not in the tongue or in the floor of the mouth, but in the jaw—many times we got an intense neuritis which I do not know how to control. The enjection of alcohol at the foramina of exit will not stop that pain as it is a terrible thing.

Carcinoma of the jaw is, I think, a little different. Personally, I feel better satisfied when I can burn it out with an electric cautery and it is amazing to me how the cautery, a large cautery, will wade right through and destroy and you will see your carcinoma disappear under your eye, but when normal tissue is reached, for some reason or other it will not burn. One must hold the point on the fibrous tissue a long time to burn it, and somehow or other that gives me a little more confidence that I have gone beyond the growth—burning it out of the jaws, even in the angle of the jaw and over a little into the tonsillar area of the floor of the mouth. In the experience of Dr. Gilmer and myself, I think the cautery has been fairly satisfactory in many cases.

Surgeons are not very successful in having a patient resort to a complete removal of the tongue or even a hemi-removal when the lesion is small. It is mutilating and severe. We get cures—cures I think are probably governed by the malignancy of the individual case. Some of these cases are not prone to metastasize quickly; others are of a very slow growth and those are, of course, the ones in which the brilliant results are obtained. So I think that the radon is the ideal method of treatment, especially in the carcinomata of the tongue.

Dr. W. A. Pusey, Chicago (closing discussion): I think that it might be well to call your attention for a moment to the very unfavorable situation that carcinoma of the mouth presents for ordinary methods of treatment. Even with the best results the removal of the tongue is an exceedingly mutilating procedure and even if you get a radical result, the mutilation remains. But radical results from all sorts of destructive measures other than radio-active energy, are exceedingly rare. The course of a patient with carcinoma of the mouth is one of the most unhappy things that I know. To die with a carcinoma destroying the mouth is a miserable fate.

If these radium implants did nothing but palliate that condition, they would do a great deal and they sometimes do more than that. I was rather slow to take up the treatment. Indeed, I was urged to it by my associate, Dr. Weber, and the first case that I treated I remember was so striking in its results that I became enthusiastic.

That was a man with a carcinoma that involved practically the entire tongue, a sloughing mass. The patient was sent by Dr. Jos. A. Miller. We stuffed these seeds all through the tongue, and to my amazement, got a symptomatic cure. The man's tongue entirely cleaned up. It was sclerosed naturally, from the scar tissue that was produced, but he was left with a functioning tongue as far as speech and everything else was concerned. The man lived several years and then he died of something else.

Dr. Miller got a post mortem and he reported to me that they found on most painstaking examination of the neck, no evidence of carcinoma; they did find a little mass of carcinoma in his pancreas. Whether it was a metastasis or a new growth, I do not know.

That represents the best sort of results that I have seen from the use of radon, as it is called, in carcinoma of the mouth. I have seen that duplicated many times. I have seen some failures. The best results that I have seen have been in the body of the tognue in the anterior two-third and in the floor of the mouth.

I have one patient whom I recall right now who had a rather extensive carcinoma in the floor of the mouth, under the front of the tongue whom I

treated a couple of years ago. I supposed he was ended.

Well, about three months ago I was called, to my amazement, to see if I could not get him to stop drinking. He concluded he was going to die of cancer of the mouth and was drinking himself to death. The floor of the mouth was absolutely clean. As far as I can make out, the man has no carcinoma left.

These two cases represent the favorable results you get and even where you do not get those results, you can usually get a local cure in which cases the patient at least dies of carcinoma somewhere else rather than carcinoma of the mouth, and I would much rather die with carcinoma of the liver or pancreas or even of the neck than a carcinoma in my mouth!

The symptomatic results are beautiful. The beauty about it is the simplicity of the treatment. You take a hollow needle about two inches long, as big as a darning needle, with a sharp point and a little wire trocar. These radon seeds are about the diameter of a cambric needle and three-sixteenths of an inch long. If you are fifty years old you cannot see them without your glasses.

You pick them up with a little pair of forceps, retract the trocar a little, stick in the needle, push that into your mass. You want to get one into each mass of tissue that is about the size of an average dice. You poke it in, put in your three or four or five or six, and all the work is done. Sometimes we do it under local anesthesia, sometimes we do it without anesthesia. The pain is trivial. The subsequent pain is sometimes, I think, rather hard, but as a rule, it is not.

The radon is inexpensive. You buy these glass seeds, a millicurie each, for three dollars and gold ones for four dollars. The gold ones are better because they screen out the beta rays, give less reaction and necrosis and get equally good results.

Take a mass of carcinoma as big as a plum, for example, and you can't put more than four or five seeds in it, so the treatment is inexpensive, it symptomatically has fine results and it has radical results, in my judgment, more than any other method of treatment with which I am familiar.

I would summarize it by saying that it is as much an addition to treatment of carcinoma of the mouth as is radium in the treatment of carcinoma of the uterus.

Dr. Pusey (Closing Discussion): I quite agree with Dr. Potts about the treatment of carcinomata that involves the bone. We were referring altogether to carcinomas in the soft tissues of the mouth. In my experience radium and x-rays are practically futile in comparison with surgery when the carcinoma has involved the bone. Sometimes when there is only periosteal involvement and the tumor is immovable, you may treat it all right, but if the carcinomatous mass is in the bone we did not mean to say that we thought radon or x-ray was as adequate as surgery.

HEART DISEASE IN CHILDHOOD

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The chief factor in the production of heart disease in children is the rheumatic diathesis, under which we must include chorea, growing pains and repeated sore throat. In the attempt to control cardiac disease, early diagnosis and continued observation, with eradication of all foci of infection are necessary. Children who have had rheumatism or chorea must be regarded as pre-cardiacs and should preferably have a definite examination at regular intervals.

This boy of ten comes to us with an acute rheumatic fever involving several joints, and has a definite history of frequent sore throat. On careful analysis of his past history we find that a year ago he passed through a sick spell with general ache, anorexia, tiredness, restlessness, palpitation and shortness of breath, but had no medical supervision at that time. In spite of repeated sore throats the large, cryptic and infected tonsils have not been removed, but are at present again inflamed. There are in addition several carious teeth and an alveolar abscess. The white cell count is 15,000 and may be taken as an index of active infection. In chronic endocarditis or rheumatism in which we have eliminated other sources of infection, the presence of leucocytosis can be taken as a presumptive sign of the reactivation of our rheumatic infection. The hemoglobin is 80% which is somewhat higher than is usually found in untreated chronic lesions. The left heart is one inch to the left of the midclavicular line, the right heart border is substernal, and there is a soft blow replacing the systolic cycle, with a presystolic crescendo at the apex and base. A thrill is palpated over the left heart. The liver and speen are not enlarged and the chest findings are within normal limits.

In the presence of mitral stenosis and a possible pericardial friction rub, and in spite of the primary rheumatic history the primary endocarditis was undiagnosed and untreated, and most likely occurred a year ago. The lesion that appears with the first classical signs of rheumatism, now, is therefore a chronic valvular heart lesion with a possible beginning exacerbation.

Little progress can be made in our attempt to

limit and control heart disease in childhood until knowledge of the great danger of the mild infection is broadcast to the parents and caretakers of the younger generation. We must stress the severe endocarditis which may follow the untreated mild rheumatic manifestation of "growing pains," general ache, easy tiredness, anorexia and pallor. Mild acute endocarditis may manifest itself with nothing more than a low grade fever, anorexia, general ache, slight shortness of breath and general malaise. Symptoms as repeated sore throat, otitis media, dental caries, alveolar abscess and cervical adenitis should also be regarded as indicators for a general examination.

Some progress in our fight on heart disease can be made through careful re-examination of children at definite intervals, and the careful supervision of children with a rheumatic history. The actual management of cardiac children is a matter of rest, gradual activity and diet. Light, either as sunlight or as ultraviolet rays seems to be of value in improving the general well being of cardiac children, possibly through the improvement of appetite and mental attitude.
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PASTEURIZED MILK AND SANITARY MILK CONTROL IN ILLINOIS*

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Pure, safe, wholesome milk is the one article of food which is essential for the well being of every person at some period of life. It is the indispensable food for children. Whole milk in some form must be furnished them if nutrition is to be adequately maintained and if normal growth in height and weight and normal bone and tooth formation are to be assured.

Every child from 1 year to 16 years of age is better for having a quart of milk in his daily diet. The minimum allowance for any growing child is 1½ pints daily; an adult needs 1 pint daily. Milk can be used in the cooking of food and so disguised for those who do not like it as a drink.

There is a real relation between milk and health and growth. Impaired nutrition means decreased vitality and lowered resistance to disease. Our future depends upon the stamina of the children. Milk has no adequate substitute in the diet. Milk is the chief calcium food. Milk is the cheapest source of high-grade protein. Milk is rich in the growth-promoting vitamin—vitamin A. Milk is the chief of the "protective" foods that compensate for the inadequacies of the American diet and so keeps the people well. These facts are well known but are repeated here for emphasis.

The reasons that make milk a perfect food for humans, however, also make milk a medium well adapted for the development of bacteria, and the common conditions under which it is produced result in the serious contamination of a large proportion of our supply. The contamination of milk with bacteria and the adulteration of milk with foreign substances is a matter of grave concern because such dangerous milk cannot be detected in most cases by the consumer.

Milk sold in Illinois today may be grouped roughly into three classes: 1. raw milk, 2. certified milk, and 3. pasteurized milk.

Approximately 30 per cent. of the milk sold in Illinois today is raw milk. This milk is produced within a very short distance of where it is sold and is distributed by a large number of dealers having small investments in proper milk handling equipment, generally are poorly equipped to properly handle milk, and whose daily output is very seldom greater than 50 gallons per day. In addition, these men generally are poorly trained in sanitation.

The sanitary control of the raw milk dealer is a function of the State Department of Agriculture, Division of Foods and Dairies. The supervision consists essentially of a system of sample collection and analysis together with an occasional sanitary inspection. The department has adopted standards for the composition of milk and dairy products, and foodstuffs that do not meet these standards are declared to be illegal. Some local departments of health also assist in the supervision of these dairies. In only a few cities, however, have suitable standards been enforced which require that the raw milk sold will be handled in a satisfactory manner.

About seventy-five Illinois cities have adopted

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some sort of a milk ordinance which is unquestionably a step in the right direction but unless some provision is made for carrying out the requirements of the ordinances, it cannot be assumed that the milk supply is properly regulated.

Certified milk is the product of dairies operated in accordance with accepted rules and regulations formulated by authorized medical milk commissions. Certified milk is the highest grade of raw milk anywhere obtainable, but because of its exceedingly high price required by the extreme care exercised in handling it, there is but a small amount of certified milk sold in the State away from the Chicago market. In this connection it must be remembered that it is exceedingly important for the county medical milk commission authorizing the labeling of milk "certified" to be sure that the milk is being handled in accordance with the rules of the American Association of Medical Milk Commissions.

Pasteurized milk in Illinois is milk that has been heated to at least 142° F., never more than 145° F., and held at that temperature in approved apparatus for at least 30 minutes. The milk is never boiled, and nothing is added to the milk or taken from it. Approximately half of the milk sold in Illinois outside of Chicago is pasteurized, and more than 70 per cent. of the milk sold in the entire state is pasteurized.

Under the milk-pasteurization plant law which was adopted in June, 1925, the State Department of Public Health supervises the construction and operation of all Illinois milk-pasteurization plants and supervises the handling and sale of that milk in the State. Minimum requirements have been prepared and adopted by the Department in accordance with the law, and a plant is granted a certificate of approval when properly equipped and operated.

Following the initial inspections of the 306 milk-pasteurization plants in Illinois in 1926 (not including those in Chicago), a summary was made showing the defects found in the plants at the first inspections. This summary was presented to you at your annual meeting in Urbana in 1926.

Since that time a great deal of work has been done by the State Department of Public Health in inspecting the milk-pasteurization plants and in improving the milk handling in accordance with the law so that the milk and milk products sold in Illinois labeled "pasteurized" would be assuredly safe. We are very glad to report to you at this time that more than 98 per cent. of the defects originally present have been corrected and that today there are 316 plants located in 174 cities in Illinois that are properly operated and which have received from this department a certificate of approval. Within the next few months all of the 341 plants will have been certified.

This improvement has been brought about entirely by a program of education and cooperation. Only a few of the very poorly equipped and operated plants in the State were forced to give up pasteurization because of difficulty in meeting the department's requirements (and these few plants should have been forced to discontinue years before), while during the same period 35 new plants applied for a certificate of approval. Thus there has been an increase of more than 11 per cent. in the total number of plants in the State during the past year while the consumption of pasteurized milk has increased more than 15 per cent. during the same period. It is significant to note that although the plants have gone to considerable expense and effort in improving their equipment and methods and in greatly improving the quality of the milk itself, in not one single instance has the cost of the milk to the consumer been increased.

In communities of less than 1,000 population the construction and operation of a milk-pasteurization plant is not always a profitable commercial venture. Pasteurized milk is often brought into these towns from nearby cities, and in some instances the milk is pasteurized in the home, although most of the milk is consumed raw.

Where pasteurized milk is available oftentimes there is some prejudice against its use. Because the Department of Public Health believes that pasteurized milk is the best general milk supply for municipalities, we have been keenly interested in determining whether or not there is a legitimate objection against its use.

One statement often made against the use of pasteurized milk is that it is merely a poor quality milk that has been heated to keep it sweet.

Nothing could be farther from the truth. Our present requirements make it compulsory

for the plant operators to make tests of the milk as it is delivered to the plants, and many plants pay the producers on a quality basis. Milk that does not meet the required standards is rejected. The milk dealers of Peoria, in cooperation with the producers, have recently formed a milk testing commission, and in a short time all of the raw milk delivered to Peoria pasteurization plants will be purchased on the basis of butter-fat tests, sediment tests and methylene blue classification. The raw milk will be improved when the farmer is rewarded for producing a quality product.

The State Department also supervises the quality of the raw milk delivered to the plants. During the last three months of 1927, the Department of Public Health collected more than 1,500 samples of raw milk and on these samples determinations were made of the temperature of milk, its acidity, the amount of visible dirt present and the bacterial quality of the milk. It was found that the quality of the raw milk brought to the pasteurization plants compared very favorably in quality with the milk sold as raw milk in the community. Pasteurization will not make a poor quality of milk good and this fact is recognized by the plant operators because competition demands that the milk sold shall be of a good quality. Many of the larger concerns employ field men to educate the farmer to produce a cleaner and more wholesome product.

During 1927 a mobile milk testing laboratory was purchased, equipped and placed in operation to assist in improving the quality of raw milk coming to the plants, the efficiency of the plants, and the quality of the milk as it is ready to be distributed to the consumer. Detailed inspections of 32 milk-pasteurization plants located in Springfield, Urbana, Champaign, St. Joseph, Bloomington, Rockford, Rochelle and Decatur were made during the latter part of 1927. Analysis of 1,798 samples were completed. Bacterial plate counts were made of the bottled milk, and of milk bottles, cans, and equipment to determine the efficiency of their sterilization.

That the pasteurized milk sold in the State today is of exceptionally good quality is borne out by results of the bacterial counts of all of the samples of bottled "pasteurized" milk from the 32 plants, which showed the remarkable low average count of 18,000 colonies per cubic centimeter as determined by the official plate count.

The statement is often made that pasteurization destroys some of the food value of the milk. The only effect that pasteurization may have in impairing the food quality of the milk is the partial or total destruction of the vitamin C. This really is not such a serious fault in the case of infant feeding as may be imagined. The addition to the diet of cod liver oil, or fruit juices, readily adds the vitamin that is reduced. Leading pediatricians advocate the use of scalded or boiled milk whether it is raw or pasteurized in order to better bring about its digestion so that in reality heating of milk may be a greater help than a detriment.

It is claimed that pasteurization is not necessary nor is it always effective and that raw milk from tuberculosis-free cattle is as safe as pasteurized.

In a study recently made by the American Child Health Association and by the U. S. Public Health Service, it was definitely shown that in the United States there occurs one outbreak of milk-borne disease each week or about 50 outbreaks each year, involving thousands of cases and including typhoid fever, diptheria, scarlet fever, septic sore throat, diarrhea, enteritis, Malta fever and certain other diseases. In Illinois we have about three outbreaks each year from contaminated raw milk. It is important to remember that much illness and many deaths in children result from diarrhea and enteritis from impure milk but which are not directly traced to it.

Tuberculosis is but one of many diseases that are transmitted through milk. It is important to remember that about 80 per cent. of all pasteurized milk sold in Illinois is from cows that have been tested for tuberculosis, a figure that compares very favorably with the amount of raw milk sold as "T. B. Tested."

The most important benefit of pasteurization is that it effectively destroys all pathogenic organisms that may be present.

The charge that pasteurization is not always properly done, does not hold true in Illinois. Every plant is frequently inspected and operates in conformance with the law so that the milk sold is assuredly safe. There has never been an epidemic traceable to pasteurized milk in Illinois

nor has any outbreak been traced to properly pasteurized milk anywhere.

Many cities have realized the advantages from pasteurized milk and have passed ordinances within the past few years requiring compulsory pasteurization. Chicago and practically all of the communities near Chicago, such as Evanston, Maywood, and Cicero have adopted such legislation, as has Streator, Joliet, Cairo and Kankakee. Other cities such as Rockford and Elgin have brought about a very large consumption of pasteurized milk by means of education and cooperation.

The State Department of Public Health believes that at this time the best general milk supply for municipalities is pasteurized milk. It is no longer true that pasteurized milk is a very poor quality of milk that has been pasteurized in order that it will keep until delivery. It is no longer true that the raw milk delivered to milk-pasteurization plants is produced under filthy conditions and delivered dirty to the plants. It is no longer true that pasteurized milk is not assuredly safe. The fact that the plants must meet the rigid requirements of the State Department of Public Health in producing and selling pasteurized milk is an assurance that the milk is clean, wholesome and safe.

Illinois now has one of the best supplies of pasteurized milk anywhere available. In the communities where it is available it is recommended for use.

DISCUSSION

Dr. N. O. Gunderson, Rockford, Ill.: That the State Department of Public Health has been a great factor in elevating the standards under which pasteurized milk is produced and transported in the state of Illinois is very vividly brought out in the excellent paper just read by the essayist, Mr. Paul Krueger. Not only has progress been shown, but the benefits accruing to young babies, youngsters, and adults are manifesting themselves in terms of a general lowering of morbidity, infant mortality, and general death rates.

Pasteurization is now more than ever before looked upon as the only safe means of protecting a city's milk supply. In these terms, is it not encouraging that there has been an increase of eleven per cent. in the number of pasteurization plants, and a fifteen per cent. increase in the amount of pasteurized milk consumed throughout the state of Illinois?

It is regretted that pasteurization can not be extended more rapidly to the smaller cities of the state, especially in view of the large number of untested dairy herds in the state, but here also a note of warning should be sounded. With the rapid acceptance of tuberculin testing should we not be careful about substituting this test for pasteurization? That is, let us see to it that the tuberculin testing of dairy herds supplements but does not supplant pasteurization.

In other words, many milk ordinances contain a clause that milk shall be pasteurized or derived from cows that are under state and federal supervision. This latter clause has, as in California, led many cities to make the mistake of thinking that milk from tuberculin tested herds in the raw state fulfills all the requirements of pasteurization, which is not true.

In closing, let it be said that every health officer perhaps should ask the question, "Is the milk supply of my city free from tuberculosis germs?" besides the question, "Are all the dairy herds under state and federal supervision?"

There is a great deal of difference between the two and can be answered only in terms of the following statement: *"Let the tuberculin testing of dairy herds supplement but never supplant pasteurization which is being so ably supervised by the state department of public health."*

I wish to commend the excellent progress shown by the paper just presented.

Dr. Gottfried Koehler, Chicago: I listened with a great deal of interest to the progress made by the essayist. For a long time we in Chicago thought we had a sort of monopoly on the control of the milk supply, but it seems that excellent work is now being done elsewhere, especially throughout the state of Illinois.

I was particularly interested in the various phases of the control of pasteurization touched upon by the essayist, and especially interested in the mention of the portable laboratory which the State Department of Public Health has used in checking up on the milk supply of the various cities in the state. I should like to hear from him if he thinks that such a laboratory will be feasible for us in a city like, say, Chicago; also, if he finds it more convenient and profitable to use this laboratory in the field than to send the samples to a central point, as we have been doing for a number of years.

I have thought, personally, that in the control of our Chicago milk supply, which comes from a very large territory surrounding Chicago from as far distant points as northern Wisconsin, central Michigan, and certain seasons of the year, from Iowa and Ohio, that we might very well make use of a portable laboratory, such as the state has used in its work.

It has come to our attention recently that the state, in checking up on the milk plants in the northern district, has not only gone over the plants, but has also checked up on the precautions that are

taken to protect the milk supply from infection after it has been pasteurized.

In that connection they are making examinations of the workers, particularly those that assist or take part in the bottling and capping of the milk. The pasteurization may be perfect, but if we have hand capping, as we have had in some of our plants, there is danger of reinfection in case a typhoid carrier should be employed in that plant.

We are not making physical examinations of employees in the milk plants at the present time. I should like to hear something more from Mr. Krueger on this point. Has the work that they have been doing, shown any infection of the workers? Have they found any carriers, and how far are they going in the examination of these workmen?

I was very much interested in what Dr. Gunderson said. I know of Dr. Gunderson's excellent work in Rockford. I have had occasion to go over some of his reports; and the reading of those reports helped to convince me that Chicago is not the only city that is doing excellent work in attempting to control its milk supply.

Dr. Benjamin Goldberg, of the Municipal Tuberculosis Sanitorium, recently sent a communication to the Department of Health, asking if we had made any examination of milk obtained from dairies where the herds were under government and state supervision, with a view to determining whether such milk contained tubercle bacilli. We are now engaged in making such examinations, and I am very much interested to know what the result will be.

I do not quite agree with Dr. Gunderson that freeing the milk from living tubercle bacilli is the main object to be attained in milk control, and if that result is obtained pasteurization is unnecessary. Such a method of procedure might be possible in smaller communities, but in a larger city, particularly a city the size of Chicago, it would be practically impossible for us to keep such a check on the farms and on the bottling plants, assuming that pasteurization would be eliminated, to insure against infection from other communicable diseases.

Previous to the time that we had universal pasteurization in Chicago (as Dr. Rawlings well knows—he made his reputation in digging out those epidemics), we had extensive local epidemics due to infection of the milk supply produced on a farm just outside of Morgan Park; a typhoid infection and epidemic resulting from that infection was located in the southern part of the city.

We closed down that farm, in fact, made this particular carrier stop her work in connection with the farm. Soon afterwards we had another epidemic on the north side. Tracing it to the country, we found that the farmer who had lived near Morgan Park had moved to the northwest part of the state and was there engaged in the production of milk; and this same carrier that he had had on the farm was again engaged in handling the milk, and very promptly a second local outbreak resulted. Those things can be guarded against and prevented, as our experience has shown, only by proper pasteurization of the milk supply.

Mr. P. F. Krueger (closing): This paper of ours was presented mainly as a progress report. At your meeting in 1926, you were informed of the defects found in the plants at our first inspections. As time went on, we corrected those defects in plant construction and operation, and now we are just as frank in telling you that we believe Illinois today has one of the best supplies of pasteurized milk anywhere available. The use of the mobile laboratory will make the supply even better.

In reply to the question of Dr. Koehler regarding the use of the portable laboratory for the city of Chicago, I believe the city would have a very good use of a similar laboratory because several men could check one or more plants each day. In fact, that is our operation. We are at one plant today, obtain samples and make determinations, and then move to another plant so that we will be ready to operate at the new location the following day. I think there would be considerable saving in time over the present method in use and because of the facilities available I think a great deal more work could be done with the same personnel.

We are very much interested in knowing more about the use of health certificates for the examination of food handlers. We have required health certificates of the milk handlers and the first year we had about 600 sent in; the next year about 800, and this year we have over 1,100.

We ask these questions, aside from a few stereotyped ones: "Has the applicant tuberculosis? Open case? If so, have you collected early morning sputum in a container furnished by the State Department of Public Health and sent same to State Laboratory for examination?

"Has applicant sore throat? If so, nature of disease and evidence?

"Has applicant discharges from glands or other parts of body? Has applicant diseased tonsils? Was a diphtheria swab taken? If so, was test, positive or negative?

"Has applicant active venereal disease? What evidence?

"Does applicant give history of having had typhoid fever? If so, specimen of the stool of the applicant shall be sent to the State Laboratory for examination for typhoid carrier suspect. Have you sent such a sample?"

Then we close the certificate with the following: "I certify that on the basis of the physical examination I have made that in my opinion the above named person is free of tuberculosis, venereal disease or any other disease capable of being carried in or with the milk or milk products of such plant."

It is signed by the examining physician.

I think one of the best uses of this certificate has been to inform the physicians in the state that we have a milk pasteurization law and that we

really visit the plants, inspect them, and check their operation. Then, too, the annual examination is a good thing for the employee. We have found 45 workers in various plants showing typhoid histories, although in only one case did we find an employee to be a carrier. Nevertheless, I feel that that one case rewarded us for all of the work that has been done.

We plan on revising our present certificate and we will welcome suggestions for its improvement.

THE INDICATIONS FOR RADIATION THERAPY IN BENIGN UTERINE HEMORRHAGES*

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The most important and practically sole indication for radiation therapy in benign diseases of the uterus is hemorrhage. Uterine hemorrhages may accompany a great variety of pelvic and extra-pelvic diseases. It is evident that the disease and not the symptom "hemorrhage" should be treated. Hence a study of 2117 consecutive hospital records from the gynecologic department was made: 1. to study the incident of uterine hemorrhages; 2. to elucidate the underlying causes and diseases; 3. to show by statistics the percentages of the various methods of treatment used, i. e. radiological, surgical or medical; and 4. to discuss the indications for the various methods of treatment.

Uterine hemorrhages have been divided into those dependent upon recent pregnancy, and those independent of recent pregnancy. Hemorrhages resulting from accidents of pregnancy, labor and puerperium and from extragenital diseases are as a rule assigned to the obstetrical and medical departments. However a small number were assigned to the gynecologic department and therefore present a low average in this survey which might lead to erroneous deductions as to frequency.

Accidents of pregnancy, labor and puerperium constitute a large number of uterine hemorrhages. It is imperative that the possibility of such disturbances must always be borne in mind to prevent errors in diagnosis and treatment. If a woman during the child bearing period of life complains of amenorrhea or of a uterine hemorrhage taking place after a period of amenorrhea or a missed menstrual flow, she should be deemed pregnant until proven not to be pregnant. A waiting attitude and observation will help in the diagnosis. Of the fifty cases listed under metrorrhagia in the column on abortion fifteen had an extrauterine pregnancy, eight subinvolution, twenty-four incomplete or threatened abortion, three a hydatid mole, and one a chorionepithelioma.

A small number of uterine hemorrhages is caused by acute infectious diseases as influenza, typhoid fever, scarlatina, variola, rheumatic fever, etc., and chronic organic diseases of the heart, lungs, liver and kidneys if they produce severe toxemia or general passive hyperemia.

The Frequency of Uterine Hemorrhages.

A menstruation which lasts too long or is too profuse is termed hypermenorrhea; if it occurs too soon, that is every twenty-four days or oftener, it is termed polymenorrhea. A uterine hemorrhage varying from a mere "spotting" to very profuse amounts and taking place independently from the menstrual flow is termed metrorrhagia. There must be an aberration from the habitual course of menstruation and it must have been existent for some time in a given instance to place such occurrence in the group of uterine hemorrhages of menstrual type,—collectively also called menorrhagias. However each spotting of blood or unusual bleeding occurring at any period of life calls for an immediate investigation to rule out disease and particularly malignancy. Table 1 gives the total number and percentage of each group of hemorrhages.

TABLE 1.

Number of cases admitted	2,117
Number of uterine hemorrhages	802
Per cent of uterine hmorrhages	37.70
In the 802 cases of uterine hemorrhages were observed:	
1. Hypermenorrhea	335 cases, or 41.98 per cent.
2. Polymenorrhea	97 cases, or 11.66 per cent.
3. Metrorrhagia:	
(a) Benign metrorrhagia	117 cases, or 14.66 per cent.
(b) Carcinomatas	253 cases, or 31.70 per cent.

Hypermenorrhea results from a loss of contractility of the uterus and an active or passive hyperemia. Loss of contractility follows atonicity or dystonicity of the uterine muscle. Myomata interfere with contractility of the myometrium, while hypoplasia and asthenia cause dystonicity or atonicity resulting in weakened con-

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tractility. A small number of hypermenorrheas may occur at the ebbing of menstrual life, that is after forty years, without evidence of myoma, hypoplasia or asthenia. Such hypermenorrheas are probably caused by a uterine asthenia and small myomatous nodes. The former are seen more frequently in multiparas with many children, the latter in nulliparas or in women with few children.

Active hyperemia is associated with the infectious diseases of uterus and adnexa; and passive hyperemia with displacements, trauma and subsequent scar tissue formation, and with cardiac, renal, hepatic and pulmonic disease causing general passive congestion. In either instance the blood supply to the uterus is abnormally increased, resulting in profuse menstruation.

TABLE 2.

1. HYPERMENORRHEA

The menstrual flow is too profuse and prolonged

a. Loss of contractility present in 157 cases or 47.16 per cent. Hyperemia present in 147 cases or 52.28 per cent.

Disease	Myoma	Hypoplasia	Asthenia	Menopause Bleeding	Infection	Displacement	Not Diagnosed
Number	87	28	24	18	131	43	2
Percent.	26.13	8.41	7.21	5.41	39.34	12.94	0.58

Polymenorrhea is characterized by shortened periodicity. The menstrual flow may also be too profuse or last too long, that is polymenorrhea may be associated with hypermenorrhea.

The periodicity of the menstrual flow depends upon the time duration of ovulation, which normally occurs within a 28-day cycle. Discrepancies of minus or plus 4 days are not considered abnormal. Below 24 days the menstrual periodicity is abnormally shortened and considered a polymenorrhea. In the process of ovulation the ripening of the follicle consumes from 14 to 18 days and the life duration of the expelled ripe ovum is 10 to 14 days. One or both of the processes may become shortened and the menstrual onset occur correspondingly earlier. As soon as the ovum perishes, the menstrual decidua becomes detached, menstruation is started, resolution of the yellow body ensues and another graafian follicle begins to mature. Hence polymenorrhea is an outward sign of a disarranged ovarian function. Such dysfunctions are primary or secondary. Primary ovarian dysfunction is associated with retarded or defective development of the sex organs and with disturbances in the ovarian function at the terminal processes of menstrual life. They therefore occur most frequently at the beginning of menstrual life when the ovary develops to maturity and at the termination of menstrual life when ovarian function begins to ebb.

Secondary ovarian dysfunction is caused by infections invading the ovarian parenchyma, by displacements and trauma causing intense congestion of the ovary, and endocrine disturbances especially hypofunction of the thyroid and the anterior lobe of the pituitary glands. The endocrine disturbances are listed in Table 3 in the last column.

TABLE 3.

2. POLYMENORRHEA

The menstrual flow occurs too soon

Primary Ovarian Dysfunction, 35 cases or 31.11 per cent. Secondary Ovarian Dysfunction, 52 cases or 57.78 percent.

Disease	Puberty before 20 yrs.	Maturity 20-40 yrs.	Menopause After 40 yrs.	Infection	Displacement	Not Diagnosed
Number	19	9	7	43	9	10
Percent.	13.33	10.00	7.78	47.78	10.00	11.11

Metrorrhagias are always caused by pathological tissue changes and subsequent loss of continuity of the surface epithelium by ulceration, necrosis and erosion. Since only benign hemorrhages are to be considered, the malignant diseases have been placed in Table 4 b. (See Tables 4 a and b.)

TABLE 4.

3a. BENIGN METRORRHAGIA

Chronic glandular hyperplastic Endometritis with persistent Follicle.

Disease	Puberty up to 20 yrs.	Maturity 20-40 yrs.	Menopause After 40 yrs.	Menopause Bleeding	Abortions	Senile Vaginitis	Infections	Not Diagnosed
No.	2	5	21	7	50	5	17	7
Pct.	1.71	4.27	18.77	5.98	42.73	4.27	16.29	5.98

3b. CARCINOMATA

Total number of Uterine Cancers in 2,117 cases was 253, or 11.95 per cent.

	Cervix Primary	Recurrent	Corpus
Number	178	69	6
Percent.	70.36	27.27	0.37

The Methods of Treatment and Their Indications. Perusing Tables 2 to 4 the statement may be made that infections, displacements and traumas, and accidents of pregnancy indicate

either medical or surgical treatment. Radiation therapy is never indicated in such diseases. Thus 324 benign hemorrhages may be subtracted. The malignancies also are not to be discussed, and 253 metrorrhagias due to carcinomas must be deducted. This leaves 225 cases for study, distributed as follows:

TABLE 5.

1. HYPERMENORRHEA

	Total No.	Surg. Treatm.	Radiology	Medicine
Myoma	87	66	15	6
Hypoplasia	28	7	4	17
Asthenia	24	6	4	14
Menopausal	18	5	10	3
Total	157	84	33	40

2. POLYMENORRHEA

	Total No.	Surg. Treatm.	Radiology	Medicine
Puberty	12	3	..	9
Maturity	5	..	2	3
Menopause	16	6	8	2
Total	33	9	10	14

3a. METRORRHAGIA

Puberty	2	1	1	..
Hyperplasia Maturity	5	3	...	2
Hyperplasia Menopause	21	4	16	1
Hyperplasia Menopause	7	4	3	..
Bleeding				
Total	35	12	20	3
Grand total	225	105	63	57
Per cent.	..	46.67	27.11	26.22

There were 87 myomata with bleeding and 15 were treated with radium, that is 17.25 per cent. To this number should be added 55 myomata without bleeding, but causing pain, pressure or discomfort. The table then reads as follows:

Total No. of myomata	142 or 6.71 per cent.	of	2,117 cases
Bleeding myomata	87 or 61.27 per cent.	of	142 cases
Surgery used in	108 or 75.54 per cent.	of	142 cases
Radiation used in	15 or 10.79 per cent.	of	142 cases
Medicine or observation	19 or 13.67 per cent.	of	142 cases

Myomata are new growths and present a different aspect for treatment than the menstrual disturbances due to abnormal functions of uterus and ovaries and benign tissue proliferations. Experience gained by careful observations has taught us to standardize the indications for radium therapy in myoma. These are as follows:

1. Myomata not causing symptoms do not require treatment.
2. Myomata causing hemorrhages indicate radium treatment if they are:
   - (a) free from complicating pelvic infections especially adnexitis;
   - (b) not complicated with pelvic diseases requiring surgery as ovarian tumors, corpus cancers, etc.;
   - (c) not larger than a 4 months' pregnancy;
   - (d) not degenerating;
   - (e) not growing rapidly;
   - (f) located intramurally;
   - (g) not complicated with a severe anemia out of proportion to the symptoms and clinical findings;
   - (h) not causing pressure symptoms;
   - (i) occurring in patients 36 years or older;
   - (j) not occurring in patients with personal and family neurotic tendencies; and
   - (k) not causing doubts in diagnosis.

The contraindications, of course, are the direct opposites.

When the indications and contraindications are carefully weighed, then it is not surprising that the percentage of myoma treated with radium in this series is so low.

The conclusion is justified that the treatment of choice in myomata is surgery. Whenever indicated radium should be used as it obviates the dangers of surgery.

Hypoplasia, asthenia and menopausal hypermenorrhea numbered 70 cases. The treatment applied was:

Surgical in 18 cases, or 25.71 per cent;
Radiological in 18 cases, or 25.71 per cent;
Medical in 34 cases, or 48.58 per cent;

The predominant method of treatment in hypermenorrhea due to atonicity and hypoplasia of the uterus was therefore medical; radiations and surgical methods were used in about 25 per cent for each method. The medical treatment consisted in the use of ergot, hydrastis, pituitary extract from the anterior lobe, adrenalin, regulation of exercise and food to develop and build up the body. If medical treatment failed then dilatation and curettage were employed, and if the latter failed, radiations were used. However the contraindications to radiation therapy were strictly enforced. They are: 1. Co-existing pelvic infections as adnexitis and pelvic peritonitis; 2. Desire for offspring; 3. Age, patients 36 years or younger; and 4. Neuropathic tendencies either personal or familial.

The number of polymenorrheas was 33.

Surgery was used in 9 cases, or 27.28 per cent;
Radiation was used in 8 cases, or 24.24 per cent; and
Medical treatment sufficed in 16 cases, or 48.48 per cent.

The indications for the various methods were the same in polymenorrhea as those used in hypermenorrhea.

Ovarian dysfunction was combatted by the use of anterior lobe pituitary extract and ovarian follicle extract during the period of supposed follicle maturing and corpus luteum extract during the proliferating and secreting phases of the menstrual cycle. These phases were determined from the history. Frank's method of sexual hormone determination will be a great step forward in correct treatment, as thereby the secreting phase of the endometrial cycle may be definitely shown. If the results of medical treatment were unsatisfactory then dilatation and curettage were done. If these failed radium was used, provided contraindications did not exist.

The entire number of hypermenorrheas and polymenorheas, collectively classed as menorrhagias, was 190.

Medical treatment was employed in 56 cases, or 29.47 per cent.
Surgery was indicated in 93 cases, or 48.95 per cent.
Radiation was indicated in 41 cases, or 21.58 per cent.

The metrorrhagias, due to benign hemorrhages, numbered 35 cases.

Surgery was used in 12 cases, or 34.29 per cent.
Radiation was indicated in 20 cases, or 57.14 per cent.
Medical treatment was given in 3 cases, or 8.57 per cent.

Chronic glandular hyperplasia of the endometrium results from a persistent follicle. On bimanual palpation the follicle may be palpated as a cyst the size of an English walnut. The menstrual decidua continues to grow. Finally ulceration or necrosis takes place in the uterine mucosa giving rise to the alarming hemorrhages observed in such cases. There is an absence of menstruation at the expected time, and the hemorrhage occurs within one to three weeks later. To make a diagnosis curettage and histological tissue examination are essential. Curettage arrests the bleeding in about 50 per cent. Radium is indicated if the hemorrhages recur, the patient is 36 years or older, and infections and other pelvic diseases do not complicate the hemorrhagic metropathy. The insertion of radium must be preceded by another curettage and microscopic examination to rule out malignant degeneration.

It must be emphasized that a patient suffering from uterine hemorrhages should not be treated unless the underlying cause has been determined and a correct diagnosis made. All uterine bleeding must be viewed with grave suspicion until it has been proven to result from benign diseases. If the introduction of the uterine sound into the uterine cavity with strictest asepsis causes a thin stream of bright red blood to escape into the vagina and if the trickling of blood continues for some time after the manipulation, then this observation may be regarded as highly suspicious for malignancy. If an ulcer or erosion on the vaginal portion of the cervix is touched with a cotton applicator and free arterial bleeding ensues, then the ulcer is probably malignant. Such cases should at once be subjected to curettage and diagnostic excision of the erosion or ulcer. The tissues must be examined microscopically to rule out or rule in malignant disease.

Finally every woman suffering from uterine hemorrhages should be examined and, if the cause does not become evident, the uterus should be curetted and the scrapings examined microscopically.

Summary.

1. The number of patients with uterine hemorrhages was 802 or 37.70 per cent, in 2117 cases admitted to the gynecologic service of the hospital.

2. The uterine hemorrhages were divided into three groups:

1. Hypermenorrhea, or profuse and prolonged menses, numbered 335 cases, or 41.98 per cent;
2. Polymenorrhea, or too frequent menses, numbered 97 cases, or 11.66 per cent; and
3. Metrorrhagia, or uterine hemorrhage occurring without the menstrual period, numbered 370 cases, or 46.36 per cent., which number includes 253 cases or 31.70 per cent. of cancers.

3. The underlying causes and diseases have been discussed and grouped with the respective numbers and percentages. Those groups indicating medical or surgical treatment or containing the cancers have been deducted as the purpose of the study is "the indication for radiation therapy in benign uterine hemorrhages." The number thus remaining was 225 cases.

4. The methods of treatment employed in each group has been given in numbers and percentages and the indications for radiation treatment discussed.

Medical treatment was curative in 59 cases, or 26.22 per cent;
Surgical treatment (that is dilation and curet-

tings) was curative in 105 cases, or 46.67 per cent; and

Radiations were indicated in 61 cases, or 27.11 per cent.

5. Finally emphasis has been given to the necessity of a correct diagnosis before treatment is begun. With a doubtful diagnosis immediate diagnostic curettage or excision of suspicious areas of tissues and microscopic examination must be performed to rule out or rule in malignancy.

25 E. Washington St.

DISCUSSION

Dr. W. C. Danforth, Evanston: Mr. President, Ladies and Gentlemen: I think while we all agree absolutely upon the value of radiological therapy in certain gynecological conditions, it is quite possible we disagree as to the frequency with which radiotherapy is indicated. Dr. Schmitz should be complimented on having given a very understandable and complete exposition of the subject of benign uterine hemorrhage and his terminology: hypermenorrhea, polymenorrhea—I think is of value because it enables us to use a single term rather than a descriptive sentence in referring to these conditions which we meet so often.

The fact that in a long series of gynecologic patients admitted to a gynecological service in a hospital, 37.7 per cent. required treatment for bleeding is of course of great interest to one who works in the field that he and I do.

He has very carefully set forth the value of the various means of therapy. I think it should be emphasized that radiotherapy and surgery are not competitors—that each should be used for definite indications. For some cases irradiation is very definitely superior to surgery and in a good many other instances surgery is of more value than irradiation. We should therefore not fit the patient to the type of treatment but rather pick out the type of treatment which the particular type of case requires.

This of course requires a certain degree of familiarity with the underlying pathology. There are two very common types of non-malignant bleeding to which Dr. Schmitz referred which I will refer to briefly. First, the treatment of myoma. His percentage of radiologic treatment was 10.7 per cent. In a series of a hundred which I looked over not long ago from our own service, I found we had radiated sixteen per cent., but since that time a considerable number of myomata have passed through our hands and I think our percentage becomes less.

He has very carefully and efficiently set forth the contra-indications to the use of radium in the treatment of myomata and there certainly are contra-indications just as there are indications for the use of radium.

He speaks first of size as being not greater than a four months' pregnancy. I think it is generally agreed, at least by gynecological surgeons, that the larger fibroids are better not treated with radium. In cases of small fibroids, particularly in women who are approaching menopause, the results are exceedingly satisfactory.

I would be inclined to limit the size even more than Dr. Schmitz. In our service we do not radiate over the size of a two and a half to three months' pregnancy. We are just a little less liberal as to age, as we try to limit it to women who are forty or over. Exceptions are made both as to size and age in the case of women who are not fit subjects for operations—for example, a patient which Dr. George Dick and I have under observation at this moment whose fibroid is too large for radium, I think, yet who cannot be operated on because she has a decompensated heart and an enormous aneurism. We will irradiate in that case because it is a safer thing for that particular woman.

Again, in menopausal bleeding—women who bleed profusely at or about the time of menopause. There we find radium to be the treatment par excellence. I think there is no division of opinion about that. Radium is far superior to any other form of treatment, but I do believe it should be accompanied by a diagnostic curettage because occasionally we find in these cases a corpus carcinoma which is unrecognized otherwise.

In a series of about two hundred and fifty of these which we have treated, we have had better than ninety per cent. of favorable results with one treatment of a thousand to twelve hundred milligram hours and have come to regard it as the thing to do for women who bleed at or about the time of menopause, preferably after the age of forty.

I believe there is a little tendency, perhaps, today to apply radiation too frequently and the results of this are creeping into surgical literature. I think it is of value that we should take care not to apply it where it isn't the best thing to do, because the result is that an extremely valuable method of therapy is brought into disrepute.

It is one of the most valuable adjuncts that we have, but like all other forms of treatment should be intelligently applied and, so applied, gives excellent results.

Dr. W. A. N. Dorland, Chicago: Mr. President, Gentlemen: I have always been impressed with the constructive attitude taken by Dr. Schmitz in his use of radio-therapy. It has only been since 1920, about, that the real limitations of radio-therapy have been practically well defined. The use of radium has not proved as efficacious, as widely efficacious as we had hoped it to be at first, but we can make the positive statement that in the properly selected cases it is supreme in its employment, gives better results than anything else we have. This is especially true of the non-malignant cases, which is the subject of the paper today.

Dr. Schmitz has given as the one chief or main indication for the use of radium, hemorrhage, and

in properly selected cases it is the supreme treatment for hemorrhage. I emphasize the point of there being properly selected cases.

There are a couple of precautions I wish to call to your attention which you all know, probably, but still it doesn't do any harm to repeat them. Radium should not be used in women, as Dr. Danforth has just said, under forty years of age, women who are more remote from the menstrual change, the menopause. Those women are fit cases for surgical removal and for this reason: Surgery leaves the ovaries intact, and we wish to emphasize the second precaution, that it is most important to maintain the sex function in women as far as possible. In other words, we wish to avoid the production of that distressing condition, the inferiority of abnormality complex.

I have at this moment in my care a woman, the wife of a physician of an adjoining state, who about seven or eight years ago was subjected to treatment by the x-ray and radium combined, who has had a total arrest of her sex function, and that is her distressing symptom today. She is really a very miserable creature because of her knowledge that she is no longer a woman in the sense that we understand women.

In the properly selected cases of fibroid tumors we may occasionally overstep the field. I mean this: In women in whom the x-ray or radium is contra-indicated, as a rule, while they are awaiting operation for some reason, it might not be at all out of place to give a small amount of radiation, a small dose, together with the proper associated treatment of transfusion together with iron and arsenic, just to tide over—not enough to destroy the ovarian function but enough to help to control the active symptom which is producing the anemia.

In these cases of fibroid tumor, properly selected and properly treated by radium, not only is the hemorrhage controlled but almost invariably there is noted a remarkable diminution in the size of the uterus.

I remember a case I had coming from Park Ridge, who with one treatment of fifty milligrams for twenty-four hours of radium was cured of her symptom, her hemorrhage. She went abroad immediately. In six months when I examined her tumor, it had diminished by more than half, and when I saw her two years after the first treatment, I could hardly find the fibroid tumor. Her physician had wanted to do a hysterectomy on her.

That is all I wish to add to what has been said. Dr. Schmitz has covered the subject thoroughly and there is little more that one can add except one's own personal experience.

Dr. G. E. Pfahler, Philadelphia: Mr. Chairman, everyone, I'm sure, as I do, certainly learns a great deal whenever Dr. Schmitz presents a paper. He does it in such a masterly fashion. Therefore I am not going to discuss or argue with him, but I do want to ask him questions.

In the first place, I'd like to ask him why he concludes that infections are a contra-indication to radiation in, let us say, fibroids of the uterus. Since we are (as has been brought out this afternoon) treating carbuncles and boils as most of us have done with brilliant success, why is infection in the pelvis a contra-indication? I have not been treating cases that have infection just because of this recommendation, but I am beginning to wonder why we are not doing it.

In two cases that I recall definitely that had infection associated with uterine fibroid that couldn't be operated upon, they later had a pelvic abscess drained through the vagina with very little inconvenience and that is all there was to it. The fibroid disappeared, both patients are well and free from any symptoms today.

Dr. Beclère of Paris, who about three years ago made a report on about five hundred cases of fibroid in the uterus, didn't mention any contra-indications. He obtained very good results and I think anyone who knows Beclère will accept his work as being very scientific and also very conservative.

I avoid treating large fibroids—that is, fibroids the size of my head; a three months or a two and a half months or three and a half months pregnancy to a radiologist doesn't mean very much because we are not dealing with obstetrical cases and we are not very familiar with just the size of a two and a half months pregnancy, but I do not hesitate a moment to treat a case that has a fibroid the size of a large grapefruit or cocoanut, and we all know those sizes because we see them at the table.

In the treatment of uterine fibroid I think myself that if you can eliminate malignant disease you get better results with the x-ray than you will with radium, and I can say that rather boldly because I have a gram of radium and am prepared to use radium whenever I want to. I don't think many men are carrying that amount of radium.

I do use radium commonly in these cases because I think in any doubtful case there ought to be a dilation and curettment for diagnostic purposes, and if you do that step in these cases you might as well at the same moment introduce some radium into the uterus and get an additional radium effect from the inside of the uterus and tumor area as well as from the outside, and you have to carry less radiation through the abdomen as a result. It seems to me that is common sense.

But before laying down a rule that no one should be treated during the child bearing period, I just take the liberty to speak of two patients, one sent to me by Dr. John McGlynn on the anniversary of her wedding day for treatment of a fibroid in the uterus. She had been operated upon by Dr. McGlynn for a fibroid of the uterus. He did an exploratory operation. When he got into the abdomen he found she was pregnant and not having permission to remove the uterus and being of the Roman Catholic faith, he simply had to close the abdomen up and leave the uterus.

Following that operation she aborted a monster,

and I am mentioning this case for two reasons: If that patient had any radiation treatment whatever preceding that abortion of the monster, no one in this room and no one in the world would have doubted for a moment that the radiation produced the monster, but in this instance, of course, the patient had no radiation and the monstrosity could not be ascribed to the radiation.

In that case Dr. McGlynn told me just where the fibroid was located, which permitted me to direct my rays accurately. This answers the contraindication for treatment except in cases of hemorrhage. This patient had no hemorrhage, she had a fibroid of the uterus and nothing else. She wanted children. In that case I treated the fibroid of the uterus, protecting the ovarian area. She never stopped menstruation once. At the end of the year so far as we could see the fibroid was gone, we gave permission for intercourse, she promptly became pregnant and since has had two healthy, normal children.

The other case is a patient who came to me at thirty-nine years of age. She was married to her second husband. I mention this because she had never had any children. She came because of a fibroid. A fibroid was the size of a large orange or cocoanut, approximately. I treated this patient with no thought of preserving her menstrual function. There was nothing else in this case, not even hemorrhage. But the patient wanted to get rid of the fibroid chiefly because it was causing some pressure and severe constipation symptoms.

I treated the patient, produced an amenorrhea, the fibroid progressively decreased and was practically gone at my subsequent examination. Then about a year and a half after amenorrhea, she came in and said, "Doctor, I feel a distension in my abdomen."

I said, "I think that is just constipation."

I did find the uterus somewhat enlarged, but I thought perhaps I had miscounted my previous records. My records indicated that it had been smaller before. I thought perhaps I had just mis-measured.

About two months later the husband wrote me a letter thanking me for what I had accomplished but telling me that I should have been able to recognize that this woman was pregnant. She gave birth to a beautiful, healthy child and three and a half years later (that is, last Fall), the mother brought in a photograph for me to see when she came for me to examine her in the following-up period.

There was not a sign of uterine fibroid. The child was a picture of health, then three and a half years old. The patient had never had any children before this, and after my radiation treatment she became pregnant even before menstruation had been reestablished, and has been having her menstruation regularly and is in perfect health following this child birth.

Dr. Olin: How much radiation did you give her?

Dr. Pfahler: I can't answer that. I produced an amenorrhea. I did it with the x-ray. I didn't use any radium and I am glad I didn't. There was nothing to suggest malignancy. It was purely a fibroid case.

I am raising those questions because I think we want to be very careful not to just lay down a rule. I don't want to treat large fibroids because radium alone will not cure them. You are apt to be drawn into giving too much x-ray treatment through the abdomen. I prefer and always recommend operation if the patient can at all be operated upon. As you know, sometimes a patient will not be operated on and that amounts to a contra-indication.

There is one other question I want to ask Dr. Schmitz. He speaks of the neurotic group as being contra-indicated for radiation treatment. My impression is that that neurotic group is also not a favorable group for operation. Just what is to be done in that group?

Dr. Cantrall, Bloomington: Along the line of psychology more than anything else on this, I want to compliment Dr. Schmitz on his paper and I agree with the doctor, I think it (radiation) is one of the finest things in the world for infection; I know of nothing better for cervicitis than an application of radium.

But on the psychology of this inferiority complex, on premature suppression, there is a psychological question not due to the production of the menopause. It is the way the patient is handled psychologically or the psychological condition of the patient before she is treated. I find that if patients are stable mentally and nervously I can produce the menopause at thirty or thirty-five or thirty-eight and I get very little reaction from it provided that patient is handled properly psychologically.

The suggestion of an inferiority should never be given but the suggestion that it is a natural process, but it is necessary to bring it on a little previously to Nature and that they will be just as healthy and just as well afterwards as they are before, you will have very little trouble by producing premature menopause.

I have one of the happiest women I ever knew who was perfectly normal up to the time of her first menstruation. At that time she began with an eczema over the entire body. She spent many months among your experts in Chicago trying to get relief from her eczema and she was the most miserable woman I ever saw. She came to me about three or four years ago and upon a careful study I came to the conclusion, from the history of the case largely, that it was due to an over-activity of the ovaries and told her that we would have to bring on a premature menopause, at the same time suggesting to her that it would be no harm at all, she'd be just as healthy as she would if it would come on at the natural time which would be about forty years of age.

That artificial menopause was produced by x-ray. Today that woman's skin is as clear and bright and clean as it was before her menstrual periods began

and she is one of the happiest women I ever knew.

I have several other cases which I don't care to take time now to describe, but I have never yet had any trouble in a normal case, but I should be very careful if I had an unstable case nervously or mentally, about producing it.

Dr. G. E. Pfahler, Philadelphia: May I speak one minute? I want to bring out one more point if I may.

About fifteen years ago I reviewed the first seventy-five cases of fibroid of the uterus that I had treated with x-rays and I made an inquiry of every one of these patients as to their sexual life and satisfaction and desires following this radiation treatment. Most of them had more desire and more satisfaction afterwards than before. I ascribed that to their better general health.

I do not believe that with radiation you are modifying that condition very much, if any. I believe probably none at all. That is further illustrated by the fact that the Roentgenologists who have been rendered sterile have in no sense been rendered impotent or lack in any sense sexual satisfaction or desire, and if it affects the men that way it probably affects the women that way, as judged by analogy.

Dr. W. L. Brown, Chicago: I'd like to ask just one question of Dr. Schmitz. In some cases I have treated for fibroid, the tumor has not disappeared entirely. It diminishes in size perhaps fifty, seventy-five or ninety per cent. Have you noted in your experience any of these tumors growing again?

Also, have you noted any fibroid developing in women who have previously been given as much as twelve hundred milligram hours intra-uterine irradiation?

Dr. Schmitz, closing discussion: I wish to thank every one who discussed the paper for the valuable contributions.

I feel that there are exceptions to all rules but that exceptions do not prove or disprove a rule.

My paper is confined to the indications of radiation therapy, including radium and x-ray, in uterine hemorrhages. That was the object and is the reason why I could not go into every phase of the various factors brought out by the discussants.

Dr. Danforth called attention to the limitation of size, the age, and the surgical poor risk and mentioned the exceptions to the rule. We also have treated patients with radium that we could not have treated otherwise. Also in instances where the myoma was present without a hemorrhage but surgically a poor risk. In these cases, usually with large fibroids we used the x-ray in preference to radium.

Dr. Dorland brought out the inferiority complex which develops in women who have been unsexed. We all are familiar with such unhappy patients and should avoid castration if possible. Such complications frequently arise in the neurotic patient. Hence we must be careful with any kind of treatment.

Dr. Pfahler put the question: Why should infections contra-indicate radiation in myomata? Particularly when radiations are very beneficial in infections otherwise. I am not convinced about the benefits radiations may give in infections. Superficial lesions as carbuncles respond. Whether internal, deep seated infections, especially if only dormant, react as safely is doubtful. Therefore we feel that history and signs of a pelvic infection contra-indicate radiation therapy. The gynecologist knows how easily a dormant pelvic infection is reactivated by instrumentation.

Another question asked by Dr. Pfahler was about the fate of the myomata. We know that sixty per cent. of myomatas will practically disappear after radiation treatment and one-third will not. Some will disappear very rapidly, others possibly within eight months or a year. I have seen very, very few cases where the myoma afterwards began to grow again, after an arrest of the catamenia. I do not recollect a single instance where the myoma occurred or reappeared after radiation therapy.

In conclusion, let me reiterate, the object of my paper was to discuss the frequency of uterine hemorrhages; to give a classification based on the underlying causes; and to report the methods of treatment used in these cases according to the indications given.

Society Proceedings

ADAMS COUNTY

The regular monthly meeting of the society, held at the Elks' Club, February 11, 1929. The meeting was called to order at 8:20 with forty-six present.

Dr. Stevenson read case report on "Lateral Sinus Thrombosis with Streptococcemia; Recovery Without Operation." The report was discussed by Drs. Cohen and Jurgens, and finally closed by Dr. Stevenson. The remainder of the scientific program was conducted by the Sangamon County (Illinois) Medical Society, who had accepted an exchange program with us. Dr. Don Deal, of Springfield read an interesting paper on "The Acute Abdomen," which was discussed by Drs. A. H. Bitter, W. H. Baker, Herman H. Cole of Springfield, and closed by Dr. Deal. Dr. L. E. Munson of Springfield read an interesting paper on "Hypertension," which was discussed by Drs. C. A. Wells, Herman Cole of Springfield, Warren Pearce, and Walter Stevenson, and closed by Dr. Munson.

Dr. Center made a motion that we extend a rising vote of thanks to the Springfield physicians for coming to Quincy to address us. This was unanimously carried.

HAROLD SWANBERG, M. D., Secretary.

ALEXANDER COUNTY

The Alexander County Medical Society held its annual meeting in Parlor A of the Halliday Hotel Wednesday evening, December 19th, 1928, with

practically every member present and Doctor James M. Gassoway, the president, presiding.

Officers for 1929 were elected as follows: President, Dr. James W. Dunn; vice-president, Dr. G. H. McNemer; secretary-treasurer, Dr. Phil H. McNemer; member of board of censors to fill vacancy, Dr. B. S. Hutcheson, all of Cairo.

No representatives to the State society were elected as the present delegate and alternate, Drs. R. E. Barrows and James S. Johnson, respectively, hold over.

The report of the retiring secretary-treasurer showed the financial affairs of the society were in good shape, that about 80 per cent of the eligible physicians of the county were members, and that a meeting had been held every month except during the vacation period.

After the close of the business meeting an elegant banquet was served by the hotel. This was presided over by Dr. James M. McManus, of Cairo.

Resolutions of sympathy and regret were passed over the continued illness of Dr. W. F. Grindstead and his absence from the meeting. Dr. Grindstead is a charter member of the society, and this was the first annual meeting that he has ever failed to attend. Besides his regularity in attendance he has also always been constant in other ways in contributing to the success of the society.

Addresses were made following the banquet by Dr. James M. Gassoway, the retiring president; Dr. James W. Dunn, president-elect; Dr. James S. Johnson, the orator of the evening, and others.

The president-elect then appointed the following committee on public health and legislation: Drs. J. E. Woefle, chairman, James S. Johnson, and O. M. Dickerson.

JAS. W. DUNNE, M. D.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, February 6, 1929.

1. A Rational Viewpoint of Plastic Surgery (illustrated).....Frederick B. Moorehead
   Discussion, Ira Frank
2. Some Considerations Concerning Non-Obstructive Anuria (lantern slides).....Edward William White
   Discussion—Laurence N. Mayers, N. S. Davis, 3rd.

Joint Meeting Chicago Medical Society and South Side Branch, February 13, 1929

1. Attempts to Stimulate Physiologic Processes by Diathermy—Anton J. Carlson, Head of Department of Physiology, University of Chicago.
   Discussion—Gustav Kolisher, A. R. Hollender D. Kobak
3. Present Views Concerning Calmettes Vaccination Against Tuberculosis with B. C. G. .....Isaac A. Abt
   Discussion—Alexander A. Day

Reception and Joint Meeting, Sigma Xi and Chicago Medical Society, Feb. 20, 1929

6:00 p. m.—Reception to Dr. Ray Lyman Wilbur, President, Leland Stanford University. Dr. H. S. Cumming, Surgeon-General, U. S. Public Health Service.

6:30 p. m.—Dinner, Medical and Dental Arts Club.

8:00 p. m.—Program in Auditorium, Medical and Dental Arts Club. Dr. F. R. Morton—Introduction of presiding officer, Dr. F. R. Moulton, Sigma Xi. Remarks by Surgeon-General H. S. Cumming. Sigma Xi welcome to Dr. Wilbur by Mr. W. B. Storey, president A. T. & S. F. Railroad. Address, "Contribution of the Laboratory to the Progress of Civilization," Dr. Ray Lyman Wilbur.

Moving Picture Films of George Getz East African Hunting Expedition, Feb. 27, 1929

A. R. Metz, Chief Surgeon, Chicago, Milwaukee, St. Paul & Pacific Railway.

DU PAGE COUNTY

January 17, at 6:30 p. m. in the Goodie Shop, Glen Ellyn, the Du Page County Medical society had a banquet and ladies' night at their monthly meeting. A fine meal of several courses was served. All of the Du Page county nurses were guests and the wives of the physicians were also there. Entertainment was afforded by a very clever magician who performed tricks that really baffled every one there. After the banquet dancing and card playing was indulged in.

The results of the election of officers were as follows:

Dr. Bebb of Hinsdale was elected president; Dr. J. H. Raach of Wheaton, vice-president; Dr. W. L. Migely of Naperville, secretary and treasurer.

Marriages

SAM M. BROCK, Chicago, to Miss Julia Sholl of Peoria, Ill., Dec. 22, 1928.

DOMINIC JOSEPH ZERBOLIO, Benld, Ill., to Miss Frances Linard of La Porte, Ind., Dec. 23, 1928.

Personals

Dr. Edward F. Cox has resigned as health officer of Oglesby after many years' service.

The Chicago Orthopedic Club was addressed February 8 by Dr. James P. Simonds on fundamental principles of bone pathology.

The Chicago Pediatric Society held a sympo-

sium on empyema, February 19, the speakers being Drs. Phillip Rosenblum, Eugene T. McEnery and Ralph B. Bettman.

Dr. Frederick B. Moorehead addressed a public meeting February 3 at the Academy of Sciences in Lincoln Park on plastic surgery illustrated with lantern slides.

The Rock Island County Medical Society, Rock Island, was addressed February 12 by Drs. David J. Davis and Nelson M. Percy, Chicago, on goiter.

The Jackson County Medical Society, Carbondale, was addressed December 20 by Drs. Lionel Sinclair Luton and Flavius G. Pernoud, St. Louis, on diseases of the heart and carcinoma of the breast, respectively.

The Chicago Ophthalmological Society was addressed February 18 at the Medical and Dental Arts Club by Dr. Sanford R. Gifford, Omaha, on "Synthetic Ophthalmia," and Dr. Cyrus W. Rutherford, Iowa City, on complications in cataract extraction.

The St. Clair County Medical Society was addressed February 7 by Dr. John R. Caulk, professor of clinical genito-urinary surgery, Washington University School of Medicine, St. Louis, on "Painless Hematuria."

The Vermilion County Medical Society, Danville, was addressed January 8 by Dr. Dallas B. Phemister, Chicago, on "New Aspects of Bone Infection." Nearly 400 invitations to physicians in surrounding cities were issued for this meeting.

Dr. Isaac D. Rawlings, director of the state department of public health since 1921, resigned February 11 to accept an executive position in the Chicago Department of Health. Dr. Rawlings was for years a member of the Chicago health department and from there went to Springfield as director of the State Department of Health.

News Notes

—The Chicago Gynecological Society was addressed February 15 at the Murphy Memorial Building, 50 East Erie street, by Dr. Joseph E. F. Laibe on common urologic lesions in gynecology, and by George W. Bartelmez, Ph. D., on "Some Factors in the Process of Menstruation."

—At the annual meeting of the Chicago Heart Association at the Chicago Women's Club, February 18, Dr. Rufus B. Crain, medical director, Eastman Kodak Company, Rochester, N. Y., spoke on "Industrial Workshops and Their Importance in Relation to Placing the Handicapped." Dr. Walter W. Hamburger presided at this meeting.

—The alumni week clincal program of Northwestern University Medical School will be held June 13-15. The clinics, which will include operative work, lectures and demonstrations, will be held at Wesley Memorial, St. Luke's, Passavant, Cook County, and Michael Reese hospitals, and at the medical school. A general session will be held in the Murphy Memorial Building, in which prominent out-of-town clinicians have been invited to participate. The general profession is invited to attend.

—The Chicago Surgical Society met at the University Club, February 1; the speakers were Drs. Daniel N. Eisendrath and Robert A. Arens on "Cholecystography and Pyleography as Aids in Differentiation of Biliary and Renal Calculus"; Kellogg Speed, some joint infections in adults, and tumor of the chest wall; John W. Nuzum, "Acute Hemorrhagic Pancreatitis"; Harry E. Mock and Géza De Takáts, "Hyperglycemia Following Head Injuries"; David C. Straus, subcutaneous traumatic rupture of the spleen, and Charles F. Sawyer, "Presentation of an Unusual Case."

—At a meeting of the advisory council of the League for the Prevention of Hay Fever, Dr. Bernard Fantus was elected chairman and Dr. William A. Evans, Dr. Leon Unger, Dr. Siegfried Maurer, Mr. Bernard C. Roloff and Prof. William B. Day members of an executive committee, which is to include, ex-officio, a representative of the city health department and of the Chicago Medical Society. The council will undertake to devise ways and means of organizing a lay society composed of sufferers from hay fever and persons interested in them for the purpose chiefly of eradicating ragweed from the

metropolitan district of Chicago in the hope of minimizing hay fever.

—The third Ochsner Memorial Lecture was given under the auspices of the North Side Branch of the Chicago Medical Society at the Germania Club, Clark street and Germania place, February 21, by Dr. George W. Crile, Cleveland, on "The Physical Nature of Death." Preceding the lecture, a dinner was given in honor of Drs. Malcolm L. Harris, President Elect of the American Medical Association, and Ex-Presidents Arthur Dean Bevan, William Allen Pusey and Frank Billings. President William S. Thayer, Baltimore, members of the Board of Trustees and other officers of the American Medical Association attended.

—The University of Chicago announced, February 4, gifts totaling $500,000 toward the support of its medical clinics to be made over a five-year period beginning July 1. Messrs. Albert D. Lasker and Max Epstein each pledged $125,000, and the Julius Rosenwald Fund $250,000, the latter on condition that the university obtain pledges for a like amount from local sources. The University of Chicago Clinics, opened in October, 1927, are soon to be enlarged by the addition of the new Bobs Roberts Memorial Hospital for Children, a new hospital for crippled children, and the new Chicago Lying-In Hospital, which will make the total capacity 500 beds. It was announced also that Dr. Franklin C. McLean, professor of medicine, has been appointed director of the university clinics.

—The new 225 bed Passavant Memorial Hospital, erected on the McKinlock Campus opposite Northwestern University Medical School, will open about May 1. It is the first hospital to be constructed at the medical center on East Chicago avenue, which is being developed with the medical school as a nucleus. One third of the beds in the Passavant Memorial will be available for university bedside instruction. Nine of the twelve stories will be for patients. The eleventh floor will be devoted to the operating department; the second floor to the laboratories and physical therapy department. For the present the east wing will be set aside for nurses' quarters and the nurses' school, which will be affiliated with Northwestern University. The superintendent of the hospital will be Dr. Irving S. Cutter, dean of the medical school. The Passavant Memorial Hospital was founded sixty years ago by Dr. W. A. Passavant, who also founded hospitals in Pittsburgh, Milwaukee and Jacksonville, Ill. The Chicago Passavant Hospital was formerly at 149 West Superior street.

A gift of $150,000 by Mr. Edward B. Harkness to the Neurological Institute of New York; the opening of the outpatient clinics of the Institute at the Medical Center; and the complete transfer in March of all work of this Institute to the Medical Center were simultaneously announced by Mr. Robert Thorne, president of that institution.

The total cost of completing and equipping the new building of the Neurological Institute at the Medical Center is $1,900,000, of which amount $300,000 remained to be raised at the time the matter was presented to Mr. Harkness. His gift of $150,000 leaves a like amount to be given by the American friends of neurology in order that this new building may be placed in operation in the month of March with building and equipment entirely paid for.

Deaths

William J. Arnold, Chicago; Michigan College of Medicine, Detroit, 1884; a member of Chicago Medical Society and practitioner for many years in Englewood; aged 70; died, February 2; of cerebral embolism.

Metellus Rowan Barclay, Chicago; University of Maryland School of Medicine, Baltimore, 1889; aged 61; died, Nov. 28, 1928, of chronic myocarditis.

John S. Beaudry, Chicago; Bellevue Hospital Medical College, New York, 1887; aged 64; died, January 23, of myocarditis.

Elizabeth Pauline Wolf Blitzsten, Chicago; Rush Medical College, Chicago, 1923; aged 34; died, January 30, at Rochester, Minn., of hyperthyroidism.

Barney Hicks Chamberlin, Chicago; Rush Medical College, 1887; a member of Chicago Medical Society; aged 66; died in Whittier, Cal., February 10, of diabetes and heart disease.

Eugene G. Covington, Bloomington, Ill.; Howard University Medical Department, Washington, D. C., 1889; died recently.

Edward Gordon Cromwell, Henry, Ill.; Chicago Homeopathic Medical College, 1896; General Medical College, 1904; aged 52; died, December 30, of pneumonia.

Oliver Lee Crow, Findlay, Ill.; St. Louis College of Physicians and Surgeons, 1903; aged 50; died of mastoid abscess with meningitis, recently.

ELIZABETH HOPKINS DUNN, Chicago; Northwestern University Woman's Medical School, Chicago, 1894; member of the American Association of Anatomists; formerly on the faculty at her alma mater, Rush Medical College, and the University of Chicago; aged 61; died, January 16, at the Billings Memorial Hospital, of carcinoma of the mouth.

EDWARD L. EMERSON, Rock Island; Rush Medical College, 1881; a practitioner over 40 years in New Windsor; a veteran of the Civil War; retired several years; aged 82; died, February 2.

C. GURNEE FELLOWS, Chicago; Hahnemann Medical College and Hospital, Chicago, 1885; member of the American Academy of Ophthalmology and Oto-Laryngology; at one time professor of ophthalmology and otology at his alma mater; formerly on the staff of the Chicago Memorial Hospital; aged 65; died, February 2, of coronary occlusion and arteriosclerosis.

JESSE J. FLY, West Frankfort, Ill.; Nashville (Tenn.) Medical College, 1878; Civil War veteran; aged 82; died, Dec. 24, 1928.

HARVEY A. FOSTER, Monmouth, Ill.; Kansas City (Mo.) Medical College, 1881; member of the Illinois State Medical Society; aged 76; died, January 5, in a local hospital.

I. CLARK GARY, Chicago; Northwestern University Medical School, 1889; aged 70; died, February 5, of organic heart disease.

JOHN H. GORDON, Pocahontas, Ill.; Missouri Medical College, St. Louis, 1875; past president of the Bond County Medical Society; aged 86; died, January 13, of angina pectoris.

JAMES DANIEL HIGGINS, Chicago; Rush Medical College, Chicago, 1893; aged 73; died, January 12, of hemorrhage due to duodenal ulcer.

EDWIN WILLIAM HUNTER, Chicago, Rush Medical College, 1877; aged 73; died suddenly, January 4, of myocarditis.

BENJAMIN GRANT JEFFERIS, Chicago; Kentucky School of Medicine, 1887; Trinity Medical College, Toronto, 1880; aged 78; died, January 20, from a fracture of the femur due to a fall, with bronchopneumonia and chronic nephritis.

EDWIN KIRKPATRICK, Elgin, Ill.; College of Physicians and Surgeons, Baltimore, 1886 aged 75; died, January 5, of heart disease.

ADOLPH C. KLOSTERMANN, Venedy, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1906; aged 48; died, January 20, of pneumonia.

CHARLES KOLLER, Chicago; Bennett Medical College, 1881; aged 69; died, December 27, 1928, of endocarditis.

CHARLES C. KOST, Dixon, Ill.; Missouri Medical College, 1889; aged 61; died, January 30, following a long sickness.

GEORGE NORMAN LUCAS, Brownsville, Texas; College of Physicians and Surgeons, Chicago, 1895; formerly on the staff of the Elgin (Ill.) State Hospital; aged 68; died, January 25, of heart disease.

JOHN A. MCGAUGHEY, Chicago; Northwestern University Medical School, 1883; a member of Chicago Medical Society; aged 68; died, February 6, at Michael Reese Hospital, of cholecystitis.

I. NEWTON CHARLES MCKINNEY, Camargo, Ill.; University of Illinois College of Medicine, 1902; aged 60; died at Jarmon Hospital, Tuscola, February 7, of diabetes.

JAMES HENRY MOSHER, Prophetstown, Ill.; Long Island College Hospital, Brooklyn, 1867; for twenty-one years president of the school board; aged 88; died, January 6, of pneumonia.

JAMES F. MYERS, Gibson City, Ill.; Rush Medical College, 1883; a former practitioner for many years in Rock Island and president of the Board of Health there; aged 73; died recently.

JACOB JORDAN PARKER, Normal, Ill. (licensed, Illinois, 1878); Civil War veteran; aged 82; died, in January, of heart disease.

EDWARD PATERA, Chicago; Medical Department of the University of Illinois, Chicago, 1903; on the staff of St. Mary of Nazareth Hospital; aged 53; died suddenly, January 21, of spontaneous rupture of the aorta and arteriosclerosis.

WILLIAM PETERSMEYER, Ashton, Ill.; University of Illinois College of Medicine, 1898; aged 57; a member of Illinois State Medical Society; died, January 28, of erysipelas.

JOHN ROBERT PIERCE, Mason, Ill.; Barnes Medical College, St. Louis, 1897; aged 70; died at St. John's Hospital, Springfield, January 25.

GEORGE OVERTON POPE, Latham, Ill.; Michigan College of Medicine, Detroit, 1885; aged 66; died, Nov. 25, 1928, of heart disease.

CHARLES WESLEY PUNTNEY, Carmi, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1893; aged 71; died, Dec. 29, 1928.

GEORGE WILLIAM REIS, Chicago; Harvey Medical College, Chicago, 1904; a member of Chicago Medical Society; aged 58; died, February 7, of lobar pneumonia.

HENRY GORDON TANDY, Chicago; L.R.C.S., L.R.C.P., Edinburgh, 1887; L.F.P.S., Glasgow, 1887; aged 64; died, February 1, of chronic nephritis.

CHARLES A. ULLERICK, Chicago; Rush Medical College, Chicago, 1893; aged 70; died, January 19, of cerebral hemorrhage.

ROBERT J. WALKER, Chicago; Rush Medical College, 1894; a member of Chicago Medical Society; aged 57 years; died, January 9, of myocarditis following influenza.

JOHN GILBERT YOUNG, Hamilton, Ill.; Keokuk Medical College, 1895; aged 57; died, January 20.

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